PowerMate®

StairClimbing HandTrucks

# OPERATING MANUAL




STEEL MODELS



M-2C M-2B M -1

S02-040.01

T20-000.04

For Serial Numbers 30000 and higher.

PN 010900 Rev. C1
PN 300320 Rev. C1
Eng. 02/ 28 /11

# WARNING!

## The manufacturer states that only competent operators trained to manufacturer's standards, are to use this equipment.

Training courses are available through
L P INTERNATIONAL INC., please call
1-800-697-6283

PN 010100 Rev.C.1
Eng. 01/ 20/ 11

# *POWERMATE*

## MODEL M-SERIES

The ***PowerMate®*** M-Series Models are motorized electric hand trucks used for the safe movement of heavy and awkward loads. It can move loads up and down stairs, on and off of vehicles or loading docks and across flat surfaces.

The design takes advantage of the principle of leverage. All of the lifting of the load is performed by the equipment.

The ***PowerMate®*** M-Series units are designed specifically to move loads with a various center of gravity locations. Refer to the Load Recommendation Chart for capacities.

**Standard Equipment**

Retractable Dolly Attachment
2 Strapbars
Battery Charger

**Optional Equipment**

Load Elevator Kit
Wheel Brakes
Step Extension
Twin Lift Attachment
Barrel Attachment
Extended Depth or Width Toe Plate
Refer to the accessory page for details.

⚠ **WARNING** The use of this equipment with any options other than those specified in this manual may create a hazard.

**Manufactured By:**

L P INTERNATIONAL INC.
P.O. Box 696, 151 Savannah Oaks Drive
Brantford, Ontario, Canada N3T 5P9
TEL: (519) 759-3292 FAX: (519) 759-3298
**1-800-697-6283**

PN 010910 Rev.C1
Manual 300320
Eng. 02/ 28 /11

# OPERATOR TRAINING

The ***PowerMate***® M-Series Model has been tested and inspected by both the manufacturer and the distributor to ensure the quality of manufacture and operation. The equipment is delivered by the distributor, fully assembled and ready for use.

The ***PowerMate***® M-Series Model is unique in its operation and is used to move heavy and awkward loads. For these reasons, classroom and hands-on training in safe and efficient operating procedures for all operators is absolutely necessary.

During the training, the operator should

## LEARN HOW TO DO THE FOLLOWING:

General Use the Load Recommendation Instructions
Follow the General Safety Rules

Strapbars Adjust the location of the strapbars.
Adjust, tighten and release the straps.
Stow loose strapping when not in use.

Flat Surface Raise the wheels to incline the load back.
Reposition the load in balance over the wheels.
Move over obstacles on the floor.
Bring the load back to an upright position.

Stairclimbing Position the wheels and heelplate on a stair.
Climb up and down stairs.
Rest safely in a balanced position on stairs.
Pivot on tight landings.

Lifting Load and unload onto vehicles or loading docks.
Load and unload small vans.

Two Operators Work as a team with another operator.

# GENERAL SAFETY RULES

1. **Read** all safety and operating instructions before anyone operates your *PowerMate*® unit. Use the *PowerMate*® unit only as described in this manual.

2. **Retain** all safety and operating instructions for future reference. Ensure they are readily available.

3. **Heed** all warnings in the safety and operating instructions.

4. **Follow** all installation, operation, service and safety instructions.

5. **WARNING**: Only trained personnel shall operate *PowerMate*® equipment. Failure to comply may result in possible severe injury to the operator and /or others and damage and/or loss of property. **Never** allow unqualified or un-authorized personnel to operate the equipment.

6. **Wear** safety shoes. Keep hair, loose clothing, fingers and all parts of the body away from pinch points and moving/rotating parts. Use equipment handles and controls for manoeuvring and operation.

7. **CAUTION:** Barriers, warning signs, designated walkways or other safeguards must be provided where pedestrians are exposed to the risk of collision.

8. **Inspect** the *PowerMate*® unit (see maintenance section) prior to using to ensure the operation can be safely completed. Insure all components of the unit are secure and functioning.

9. **WARNING: Do not use** *PowerMate*® equipment if it is damaged. Check for corrosion. Failure to do so may result in catastrophic failure, which may lead to injury, damage or loss of property and loss of life.

10. **Do not use** *PowerMate*® equipment in an enclosed space where oxygen, flammable, explosive or toxic vapours are present and/or are given off by oil base paint, paint thinner, some moth-proofing substances, or in an area where flammable dust is present.

11. **Do not use** accessories or attachments not recommended by the manufacturer as this may increase risks of damage and cause hazards.

12. **Use** only *PowerMate*® accessories best suited for the application ie: Strapbar Attachment for box type loads, Cylinder Attachment for cylindrical loads, etc.

13. **Check** the work site. Inspect the area to be traversed with the *PowerMate*® unit. Avoid debris, rough surfaces, pot holes, bumps, steep grades, etc. Avoid spills of any kind, slippery surfaces, soft ground and standing water. Observe any condition that may cause loss of control of the *PowerMate*® unit leading to injury and/or property damage.

14. **Plan** your work. Make a plan of action from picking up the load to the point where the load is delivered. Check for doorway size, pathway surfaces, ceiling heights, tight corners, stair step size and integrity, turn radius considerations, etc. Always use the recommended number of operators for a load.

15. **Ensure** planned route for *PowerMate*® operation is clear of obstacles and un-involved personnel. When visibility is obstructed, use spotter person for direction instruction and /or clear path of obstacles and un-involved personnel.

# GENERAL SAFETY RULES

16. **Do not place** the *PowerMate®* unit on an unstable surface. Supporting surface must be capable of carrying the loaded *PowerMate®* unit with operator(s). Check the condition of stairs and the edges of loading docks and vehicle beds. When moving on or off vehicle, be prepared for movement in the vehicle suspension system.

17. **Insure** that the *PowerMate®* unit is charged and ready for operation.

18. **Never** lift a load that is over the rated capacity of the *PowerMate®* unit. Estimate the weight and center of gravity position and refer to the Load Capacity Chart to ensure the load is within the loading envelope. The capacity may be limited by the weight and strength of the operator(s). Do not attempt to increase the load capacity of the equipment by the use of chains, rope or other means of securing the equipment to the bed or bodies of vehicles, handrails, wall brackets, etc. Do not operate with a load that is beyond the operator's physical ability.

19. **Ensure** the load is not damaged, properly packaged, no loose items such as tools used in packaging the load and sharp items (such as nails) projecting from the load.

20. **Protect** the *PowerMate®* strapping material from sharp edges to prevent strap failure. Always inspect straps prior to use. Insure the strapping latching mechanism is fully engaged.

21. **Verify** the load is secure at the beginning of use, and prior to climbing or descending with the load. Check for any loose items or load shifting.

22. **Never** unstrap a load with the *PowerMate®* unit in an open (extended) condition. The unit will fall over backwards if the wheels are not in contact with a stable surface when the unit is unloaded.

23. **Do not** lift people and never ride on the *PowerMate®* unit.

24. **Do not** load the *PowerMate®* unit with a load center of gravity that is outside the side to side limits of the unit wheels. Avoid quick reversal operations. When in transit, do not travel at excessive speed (walk, do not run).

25. When transiting a surface, avoid high speed turns that may cause the load and *PowerMate®* unit to tip. Remember that the load must be secure to the *PowerMate®* unit to ensure the load cannot shift.

26. When transiting the unit without a load, ensure the load strapping devices are secure, not dangling, to prevent a trip hazard and prevent entanglement in the *PowerMate®* moving parts.

27. **Always** keep your attention in the direction you are moving, monitoring clearances above, below and to each side of the *PowerMate®* and load. When visibility is obstructed, use spotter person for directional instruction and/or clear path of obstacles and un-involved personnel.

28. **Stay alert**. Should something break, loosen, or malfunction on your machine, stop work and seek qualified assistance to correct the condition.

29. When going down a ramp or incline, always walk ahead of the machine and use the open/close controls to engage the rubber guard (foot) with the ground to act as a brake. Do not allow the loaded *PowerMate®* to attain an un-controllable speed.

# GENERAL SAFETY RULES

30. **When** moving a *PowerMate®* unit down a stair without a load, always push the wheels off the step before lowering the wheels to the next step.

31. **Do not** compress the top urethane bumper when the machine is under load.

32. **Operators** shall determine the balance of unfamiliar loads prior to moving the load. Work performed in a balanced condition is done easier and safer. New operators should gain practice experience with lighter loads of approximately 250 lbs. with a medium center of gravity before progressing to heavier loads. Do not raise or lower the load too far past the balance point. Jog the equipment control switches so as not to transfer the load weight too quickly. **Training is mandatory!**

33. **Store** *PowerMate®* unit in a fully retracted position. If the unit is in mobile operation, ensure the unit is secure to prevent movement. Store the unit in a clean/dry environment to prevent damage and corrosion. The storage area should have adequate ventilation for the battery charging procedure.

34. **WARNING:** There is a risk of explosion if the battery is replaced by an incorrect type. Only use batteries that are provided by L P INTERNATIONAL INC. for your *PowerMate®*. Use only battery chargers provided with your *PowerMate®*. Dispose of used batteries according to your local environmental guidelines. **Do not** puncture or incinerate the battery.

35. **Do not** perform maintenance on any *PowerMate®* unit unless authorized to do so. The unit is capable of high electrical currents and the motor can generate excessive heat. If the motor/electrical compartment is accessed for any reason, the fuse must be removed and the circuit breaker activated prior to entry.

36. **WARNING:** If the *PowerMate®* unit or any of its components become unserviceable for any reason, activate(trip) the circuit breaker. Indicate on the unit in a prominent location, by way of a tag, the unit is unserviceable and words stating “DO NOT USE”.

37. **DANGER:** Never insert any metallic device, such as a tool, in the *PowerMate®* unit without first removing the fuse and the circuit breaker activated. Inadvertent contact with any electrical contact may cause the machine to activate resulting in severe injury.

38. **Never** remove or override any mechanical or electrical safety device. Replace the fuse with a fuse of equal type and rating only. If the fuse continues to blow, seek service.

39. **Do not** touch hot components. Allow the equipment to cool down before servicing.

40. Maintain the equipment regularly. Poorly maintained equipment jeopardizes the safety of the operator and all other personnel. Remember that safety is your responsibility. Complete the recommended daily inspection procedure. Do not operate the equipment if it does not pass the inspection. Have the equipment thoroughly checked by a competent service person at least once a year.

# PERSONNEL

1. **Operator** must be able to communicate clearly.
2. **Operator** must be familiar with normal operating practices and procedures. Whenever there is any doubt as to safety, the operator should stop the operation and not proceed until safe conditions are restored.
3. **Operator** must have received approved training on the *PowerMate*® unit to be used. Training shall include theory, practice and testing.
4. **Operator** must have good hearing and vision (with or without correction) and must have good depth perception.
5. **Operator** must not be afflicted with any known heart or any other health conditions(s) that might cause sudden loss of ability to react.
6. **Operator** is responsible for maintaining proficiency on *PowerMate*® equipment. Familiarity with instructions, safety procedures, maintenance practices, controls, operation and loading are required at all times.

# OPERATOR DON'TS

1. Do not eat or drink during the operation of *PowerMate*® equipment.
2. Do not sleep. Stay alert when operating *PowerMate*® equipment.
3. Never divert attention when the *PowerMate*® equipment is loaded.
4. No horseplay or practical jokes when operating the equipment.
5. Do not use alcohol or other intoxicants when operating the equipment.
6. Do not operate the equipment when taking medication that will affect your physical performance or judgement.
7. Do not abuse the equipment. Use *PowerMate*® equipment for their intended use only.

# CHARGING THE POWERMATE

**IMPORTANT:** Electrical equipment may be hazardous if misused. Operation of this product, and the device on which it is used, must always be done with complete knowledge of the product instructions and safety information. Failure to do so may cause serious injury.

**DANGER:** Lead-acid Batteries can generate explosive gases. Only charge lead-acid batteries in well ventilated areas. If charging in a vehicle, make sure sufficient ventilation is provided.

**DANGER: RISK OF ELECTRICAL SHOCK, BURNS, OR FIRE** - The battery charger must be used as supplied. Never replace, splice, or repair cables or connectors supplied with the charger.

**DANGER:** If fuse installed, replace fuse only with a fuse of the same rating.

**CAUTION: RISK OF SHOCK** - Do not use charger units if the input or output cord is cut or frayed or damaged in any way. Do not use the charger if case is damaged in any way. Do not open the charger case for any reason. There are no serviceable parts.

**CAUTION: RISK FROM HIGH CURRENTS. RISK OF BURNS** - Always be sure that the charger is disconnected from the power source and battery being charged before handling.

**CAUTION:** Protect the charger from dampness or wet weather such as rain, snow, etc. Keep charger way from sources of liquid such as drinks, washbasins, bathtubs, shower stalls, solvents, flowing water, etc. Do not allow the charger, or any of its cords and connectors, lie in standing water such as a puddle.

**CAUTION:** Charge only properly maintained and rechargeable lead-acid batteries of the same voltage rating that is printed on the charger. Other battery types or voltages, damaged batteries, or improperly maintained batteries may burst, emit dangerous gases, or cause personal injury or damage.

**WARNING:** The charger units supplied by L P INTERNATIONAL INC. are internally protected against battery polarity reversal and overload. This limits potential damage to the charger. However, the charger does not protect against shorting or overload of external wiring or of the battery being charged. Integrity of the PowerMate® unit wiring should be monitored during routine inspections.

**WARNING:** Only use the supplied charger(s) on PowerMate® products.

**CAUTION:** Position the charger and charger cords so that it is not tripped over, pulled, or placed in contact with heated surfaces. Route charger cords so that they are not likely to be walked on or pinched by items being placed upon or against them.

**CAUTION:** Do not operate the PowerMate® unit while connected to the charger.

# ADDITIONAL CHARGER SAFETY INSTRUCTIONS

## 110V Battery Charger

1. Before using battery charger, read all instructions and cautionary markings on the battery charger, battery and product using the battery.

2. **CAUTION:** To reduce risk of injury, charge only 12 volt lead-acid type rechargeable batteries. Other types of batteries may burst causing personal injury or damage.

3. Your AC cord came equipped with three-wire grounding plug (a plug that has a third grounding pin). This plug will only fit a grounded AC outlet. If you are unable to insert the plug into an outlet because the outlet is not grounded, contact a licensed electrician to replace the outlet with a properly grounded outlet.

4. Pay particular attention to convenience of receptacles. If an extension cord is necessary, use a cord with a current rating at least equal to that of the charger. Cords rated for less amperage than the charger may overheat.

5. Ensure the pins of the extension cord plug are the same number, size and shape as those on the charger. Ensure the extension cord is wired properly and in good electrical condition.

6. **Do not** overload wall outlets or extension cords as this can result in a risk of fire or electrical shock.

7. **Do not** operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way.

8. **Do not** disassemble charger. There are no serviceable parts.

9. To reduce risk of electrical shock, unplug the charger from the outlet before attempting maintenance or cleaning.

10. Disconnect the power plug by pulling the plug, not the cord.

11. **Do not** handle the plug with wet hands.

12. Unplug the charger when not in use.

## 12V IN-VEHICLE CHARGER

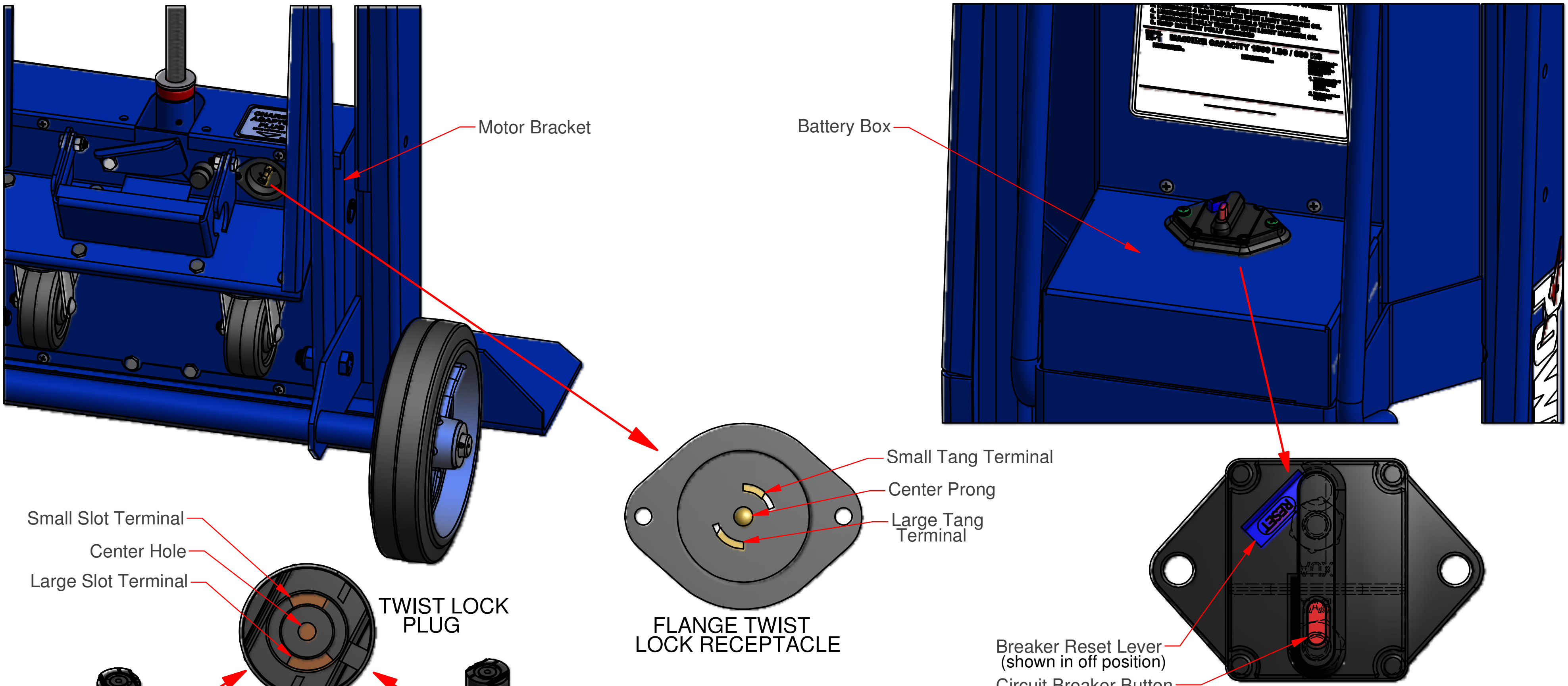
**WARNING:** The in-vehicle charger cannot protect against vehicle damage caused by faults in the wiring from the vehicle battery to the charger or faults in any other portion of the vehicle wiring harness. The user must ensure that the wiring to the charger adheres to the same vehicle wiring standards and safety precautions required for all vehicle wiring.

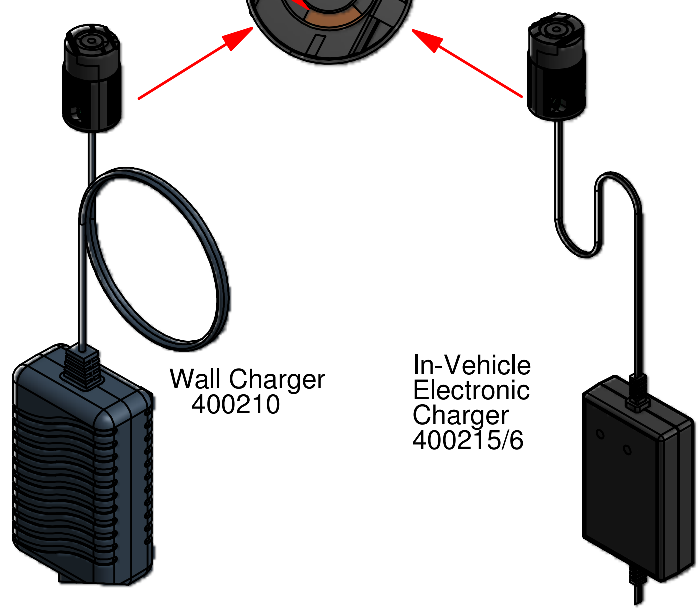
# BATTERY SAFETY

Whenever handling or working with a lead-acid battery, consult your vehicle and battery owners manual for instructions and safety precautions. Lead-acid batteries contain hydrogen-oxygen gases that can be explosive and sulphuric acid that can cause severe burns. To help avoid risk of danger and injury, observe these precautions when handling or working with a lead-acid battery:

1. **Wear** ANSI approved safety glasses or goggles and a face shield.
2. **Wear** proper clothing to protect your face, hands and body. Wear a rubber apron.
3. Make sure work area is well-ventilated.
4. **Never** lean over a battery when testing or charging.
5. Cigarettes, flames or sparks could cause a battery to explode. Keep all ignition sources away from the battery.
6. **Always** shield eyes and face from battery.
7. **Do not** charge or use booster cables or adjust battery connections without proper instructions and training.
8. **Never** remove vent caps on a sealed battery.
9. In the event of an accident, flush with water and call a physician immediately.
10. If venting gas is significantly inhaled, seek immediate medical attention.
11. **Keep** batteries out of reach of children.
12. **Never** store batteries with explosives, flammable materials, chemicals or food.
13. **Protect** batteries from crushing, punctures and shorting.
14. **Do not** strike the sides of a battery with any spark producing item.
15. **Do not** accumulate used batteries. Dispose used batteries in accordance with local environmental laws.
16. **Never** touch both battery terminals with bare hands at the same time.
17. **Remove** rings, watches and dangling jewelry when working with batteries. The metal in jewelry can cause a shock and cause a shock and burns if contacted with the battery terminals.
18. **Only** use insulated/non-conducting tools when making connections on a battery. Never lay tools or other parts on top of a battery.
19. If there is spilled sulphuric acid present, neutralize with baking soda. Because the batteries used in L P INTERNATIONAL INC. products are of the sealed type, the battery should be replaced if there is evidence of spillage.

# M-SERIES POWERMATE CHARGING INSTRUCTION




## INSTRUCTION:

1. Provide electrical power to the Battery Charger being used.
2. De-activate the PowerMate by depressing the Circuit Breaker Button located on top of the Battery Box. The Breaker Reset Lever must pop out of the Breaker housing.
3. Insert the Charger Twist Lock Plug into the Charging Receptacle located in the Motor Bracket. The Plug will lock in place with a slight clockwise turn.

The charge cycle is fully automatic.The Wall Charger and the In-vehicle Electronic Charger will indicate the charge status by LED indicators. Refer to the specific Charger documentation.

4. To discontinue the charge cycle, dis-engage the Charger Plug from the Receptacle by using a slight counter clockwise turn and pull.
5. The PowerMate can be re-activated for use by swinging the Circuit Breaker Reset Lever back into the Circuit Breaker housing.

NOTE: The PowerMate can remain on the Battery Charger at all times, ensuring a fully charged unit when called upon. In any case, the Circuit Breaker Reset Lever should always be in the off (extended) position when the PowerMate is not in use.

# POWERMATE BATTERY SPECIFICATIONS

## dryfit from Sonnenschein.

dryfit-the name that has a synonym for a future-oriented battery generation

dryfit technology was invented by Sonnenschein.

Solid advantages point-by-point:

| | |
|---|---|
| • Maintenance-free and sealed | Needs no maintenance whatsoever throughout its life. Each cell is sealed by a valve preventing penetration by air-borne oxygen. Over-pressure in the cells [e.g. through over-charging] unseats the valve so letting out the excess independent pressure; the valve then closes again. For installations of dryfit batteries in rooms, containers and cabinets the standards VDE 0510 Part 2 are complied with. |
| • Independence of position | Sonnenschein dryfit batteries of series A200 can be used in any orientation including upside down. In stationery installation, care should be taken to ensure that valves point upwards and are not covered. |
| • Deep discharge resistant | dryfit batteries survive deep-discharging without suffering damage. Even when discharged and remaining connected to a load for 4 weeks, they recover 80% of their capacity after 48 hours charging. 100% is reached after a few cycles. |
| • Extremely low self-discharging | Less than 0.1% of the rated capacity per day at +20°C ambient temperature means no re-charging even after up to 2 years storage. |
| • Cyclic capability | Special measure relating to electrolyte production give A200 version of dryfit batteries good cyclic capability. At 100% discharge [up to discharge cut-off voltage of 1.75 Volts/cell] more than 200 cycles can be obtained. Considerably more cycles are possible with partial discharges. |
| • Long-life | Under continuous charge operation the life is 4-5 years, end of life being defined as when 60% of the rated capacity is reached [as per DIN 43534]. |
| • Wide temperature range | From -30°C to + 50°C [can also be briefly exceeded]. For operation under extreme temperature conditions, please observe works recommendations. |
| • High load capacity, all-round use | Robust grid and connector design gives good high-current load properties. Excellently suited for operation under extreme conditions due to high resistance to vibration. The larger types [from 20Ah] are suitable for starting internal combustion motors. |
| • Simple charging method | Just one charging voltage for cyclic and continuous charging modes. No current limiter needed as charging current is regulated by the battery. Constant charging voltage at +20°C room temperature is 2.3 Volts/cell. |
| • VdS approval: | At present 8 types are approved by the VdS [federation of German specialist insurers]. |
| • No hazardous goods | Due to immobilized gel electrolyte dryfit batteries A200 are not classified as hazardous goods. |

**Tested and found to be good!**

Sonnenschein dryfit batteries comply with the following international standards:

**dryfit A 200**

DIN 43534 "Maintenance-free" sealed rechargeable batteries with gelled electrolyte.

DIN 43539 Part 5 Tests "Maintenance-free" sealed rechargeable batteries with gelled electrolyte.

VdS approvals:

Currently 8 types approved by VdS [federation of German insurers].

DIN 57510/VDE 0510 Rechargeable batteries and battery systems, stationary batteries.

NATO - Selected types tested and approved according to guidelines for military supply standards.

DIN EN 50014/VDE 0179/0171 Part 1/5.78 General specifications.

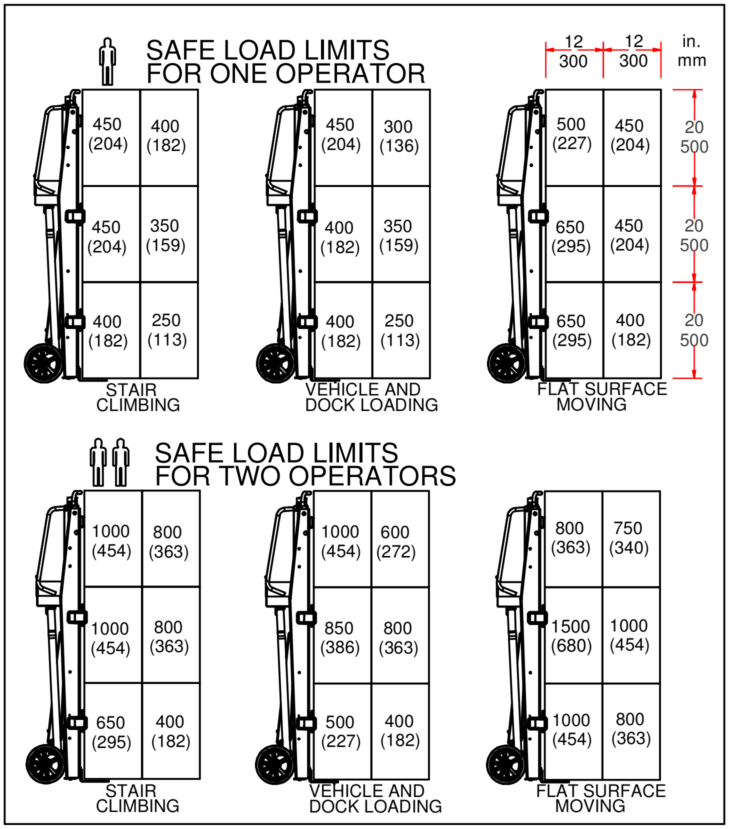
DIN 57833/VDE 0833 Part 1 Danger warning equipment for fire, assault/robbery and burglary.

UL recognition File MH 12547.

***PowerMate***® units are fitted with Sonnenschein Batteries. Customers using ***PowerMate***® get a full days' use from a fully charged battery. When ***PowerMate***® is not in use, recharge the battery.

# M-1 *POWERMATE®* LOADING INSTRUCTIONS

## M-1




After establishing the weight of your load and its center of gravity, refer to the load drawings to determine:

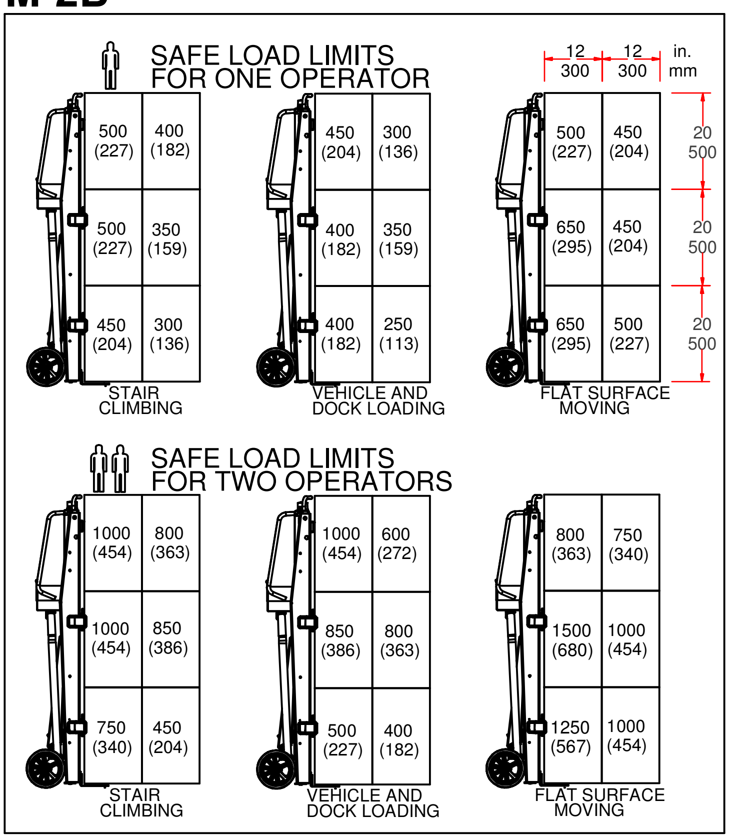
1. That the capacity of the *PowerMate®* is adequate for the intended application.

2. Whether one or two operators are required.

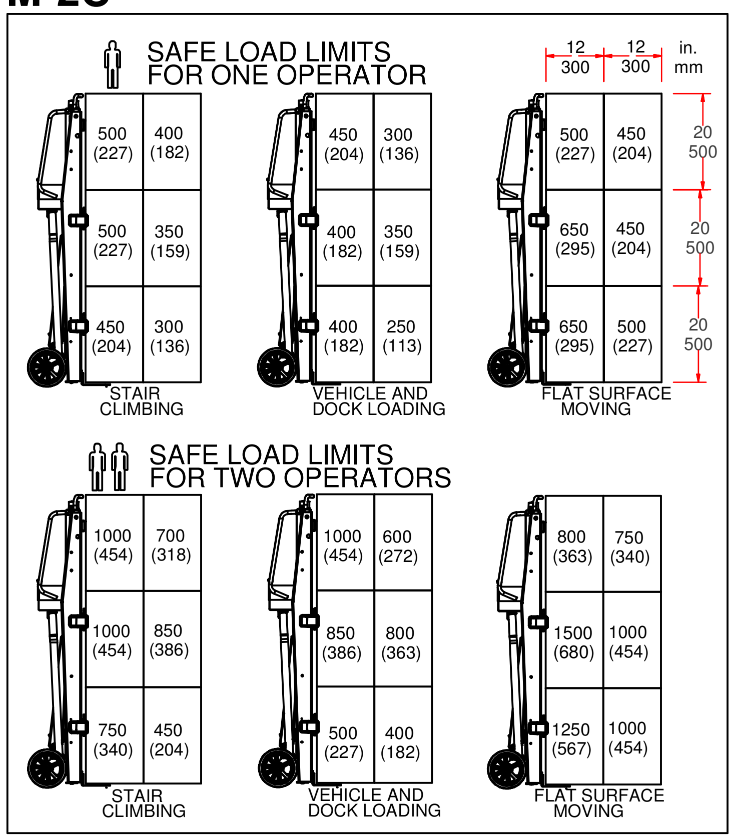
SAFE LOADING RECOMMENDATIONS IN LBS (KG).

**NOTE:** LOAD RATINGS ARE CALCULATED FOR TRAINED PROFICIENT, EXPERIENCED OPERATORS AND SHOULD BE USED AS A GENERAL GUIDE ONLY.

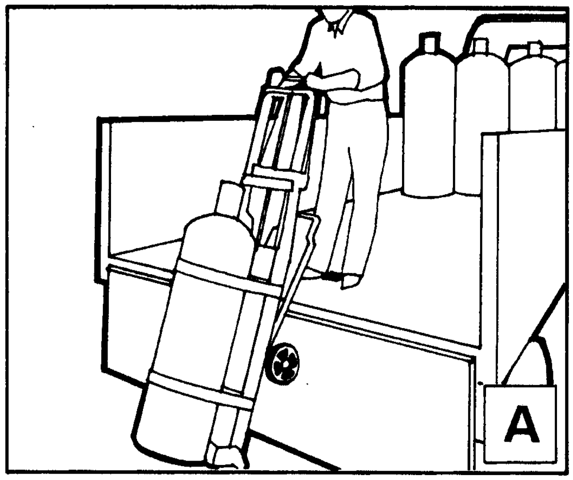
## M-2B

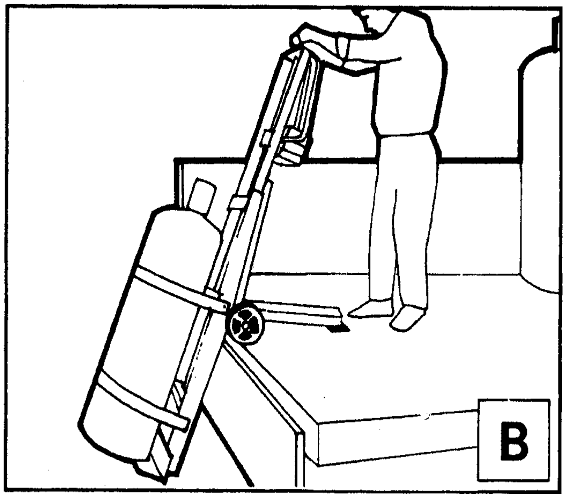


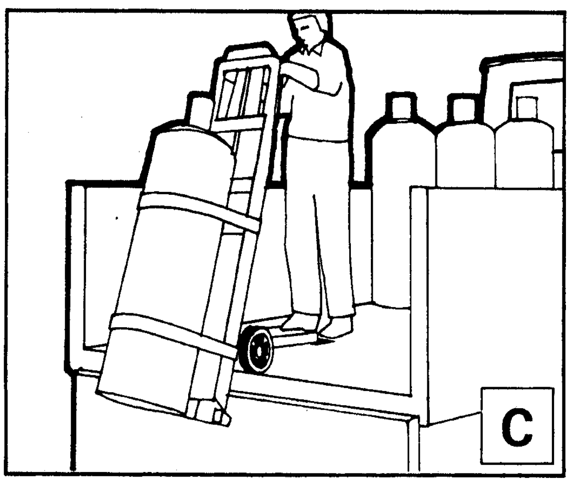

## M-2C



# ***POWERMATE*** **OPERATION**




## Loading on a Vehicle

1. Position the *PowerMate*® as shown in "A" close to the tailgate or rear of the vehicle allowing room for the wheels of the *PowerMate*® to clear the vehicle upon raising.

2. Push the "LOAD DOWN" button to raise the wheels until they rest on the vehicle bed. Lower the Hook Bar and engage the Hook Attachment (when installed) on the vehicle bed as shown in "B" and Detail "A1".

3. Push the "LOAD UP" button and raise the toeplate/load to the vehicle floor as shown in "C".

4. Disengage the Hook Attachment by pulling the *PowerMate*® away from the rear of the vehicle. The *PowerMate*® can now be positioned any where on the vehicle bed.

## Unloading from a Vehicle

1. Lower the Hook Bar and connect to the Hook Attachment in the vehicle bed by positioning the *PowerMate*® as shown in "C" and Detail "A1".

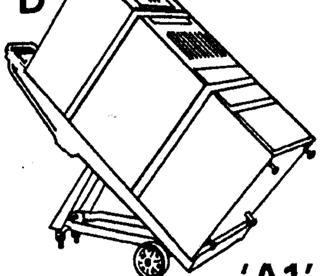
2. Push the "LOAD DOWN" button to lower the *PowerMate*® toeplate and load to the ground as shown in "B".

3. Disengage the Hook Bar from the Hook Attachment and stand the *PowerMate*® upright.

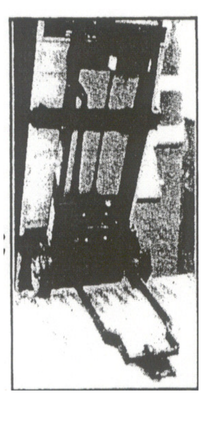
4. Push the "LOAD UP" button to lower the wheels to the ground, whereupon the *PowerMate*® can be manoeuvred as required.

5. If desired, the retractable dolly can be un-clipped and used in connection with the Hook Bar as shown in "D" to take the load and assist handling for horizontal movement.

D



'A1'



# ***POWERMATE*** **OPERATION**

## STAIR CLIMBING

### Upstairs

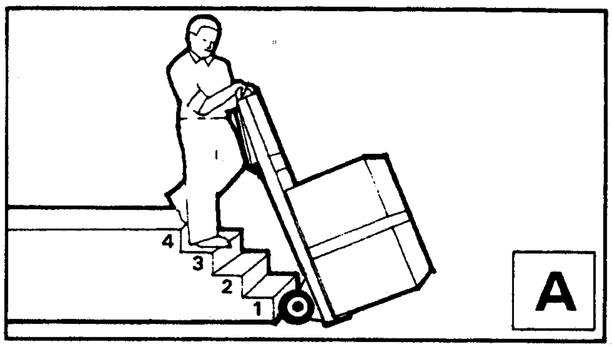
**1** Manoeuver the ***PowerMate®*** backwards to the first step as shown in “A”, just near enough to allow the wheels to clear the edge of the treads when raised as shown in “B”.

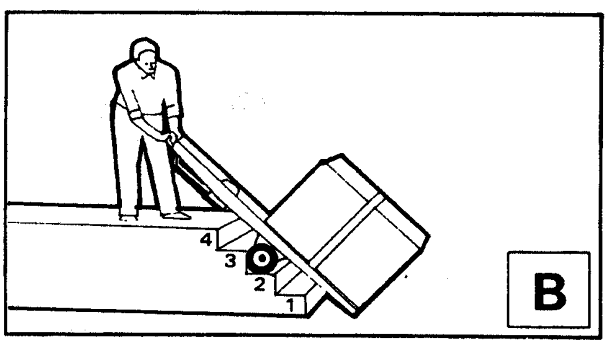
**2** Pivot the ***PowerMate®*** on the heel of the toe plate as shown in “B”. Push the “LOAD DOWN” button to raise the wheels to rest on step 2.

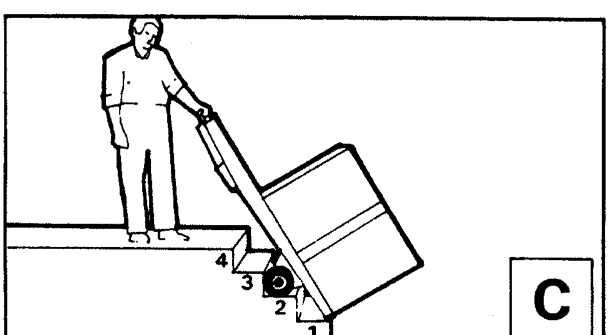
**3** Raise the toe plate off the ground, pivoting on the wheels of the ***PowerMate®***. Push the “LOAD UP” button, raising the ***PowerMate®*** frame and load and resting the frame on step 1 as shown in “C”.

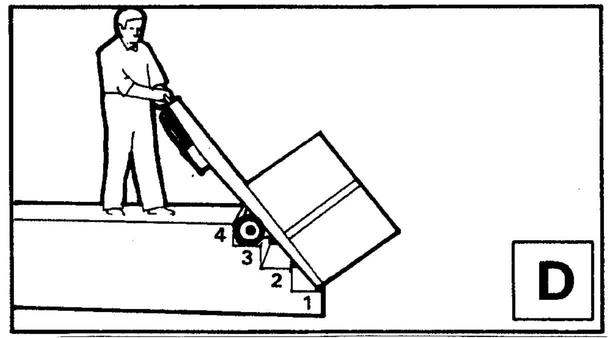
**4** Pivot the ***PowerMate®*** on the load frame so that the wheels are clear of the steps and push the “LOAD DOWN” button to raise the wheels to step 3 as shown in “D”.

Repeat procedures 3 and 4 until the top of the stairs are reached.



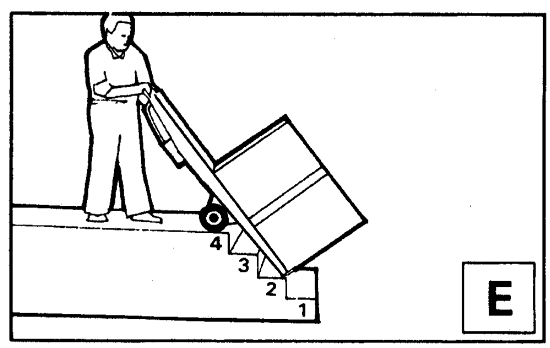

### Down Stairs

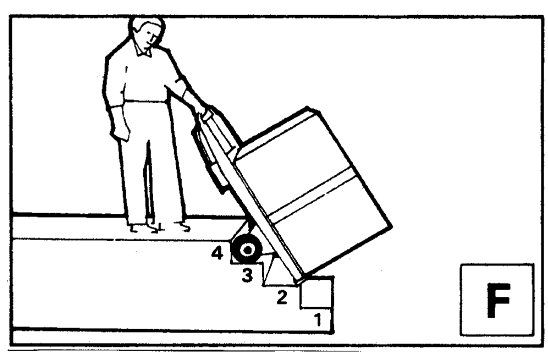
**1.** Position the ***PowerMate*** at the top of the stairs with th load frame overhanging and clear of the steps. Push th “LOAD DOWN” button to lower the load and load frame and rest it on step 2 as shown in “E”.

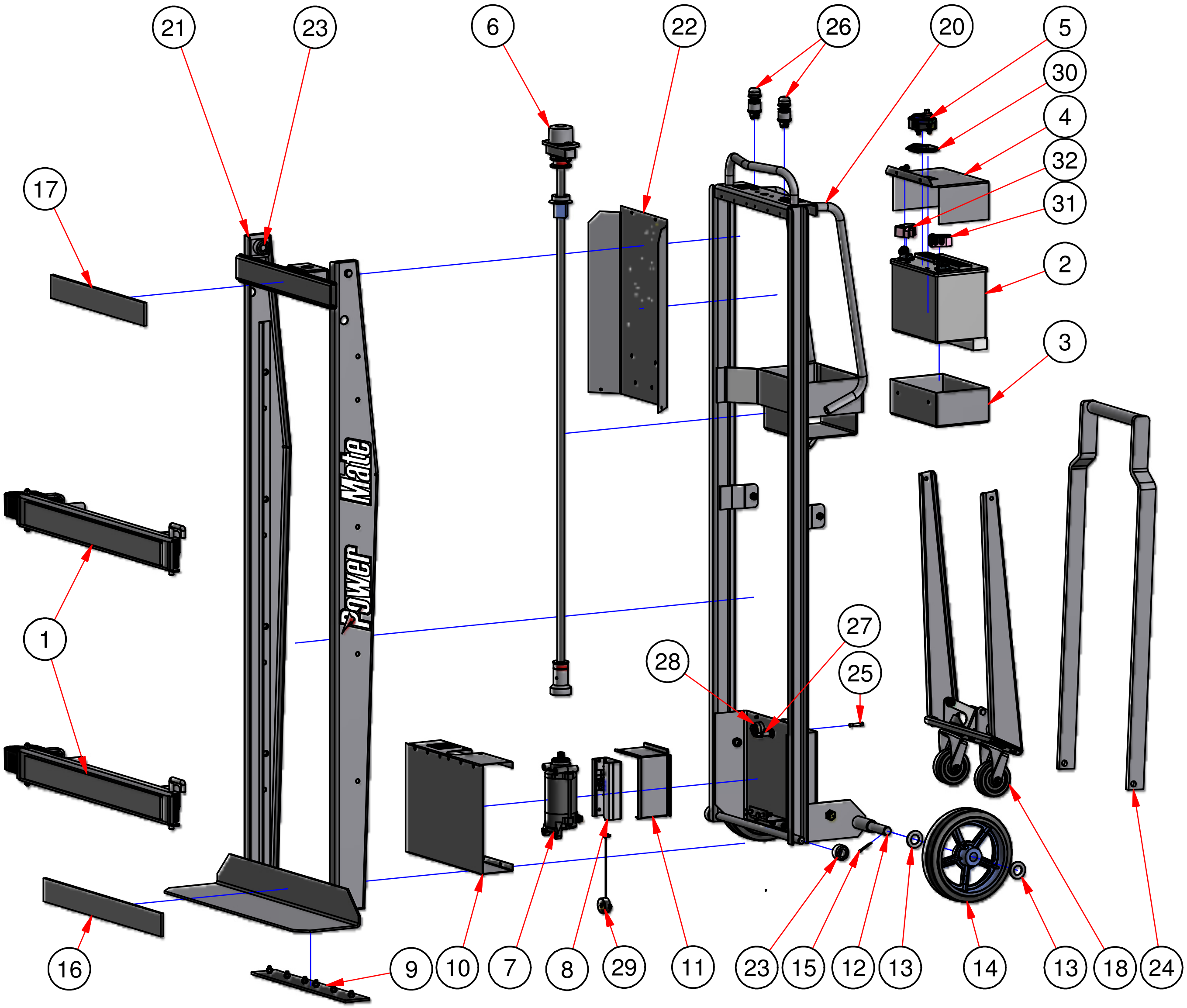
**2** Pivot the ***PowerMate®*** on the heel of the load frame and push the “LOAD UP” button which will lower the wheels to step 3 as shown in “F”.

**3** Pivot the ***PowerMate®*** on its wheels to lift the load frame clear of the steps and push the “LOAD DOWN” button to lower the load frame to rest on the toe plate on step 1.

Repeat procedures 2 and 3 until reaching the bottom of the stairs.



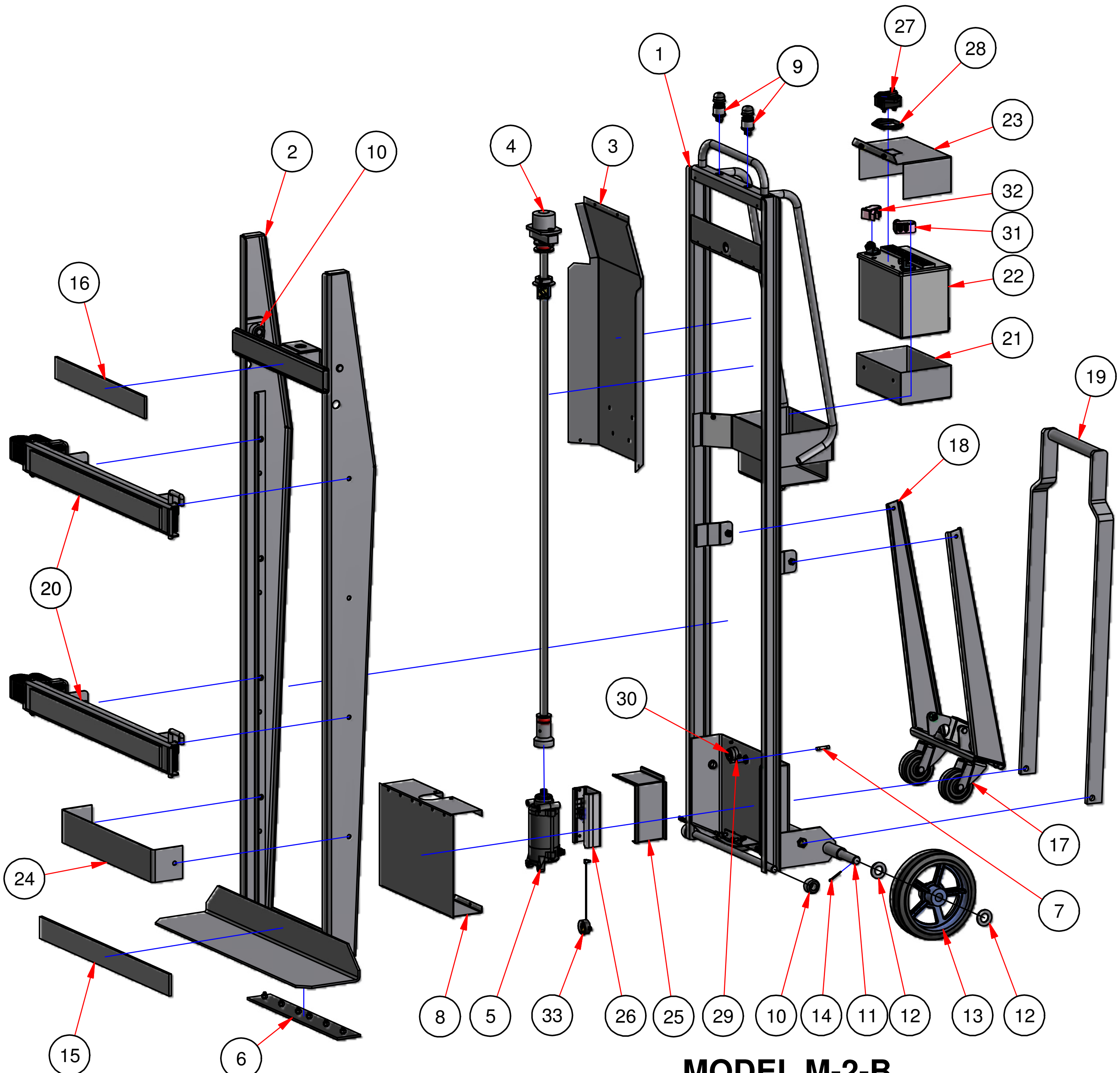






| PARTS LIST | | |
|---|---|---|
| IT | PART N | DESCRIPTION |
| 1 | 400080 | STRAPBAR MS |
| 2 | 051310 | BATTERY 12V 32Ah SEALED |
| 3 | 306010 | BATTERY COVER BOTTOM |
| 4 | 306000 | BATTERY COVER TOP |
| 5 | 051364 | CIRCUIT BREAKER 100A |
| 3.12 | 100313 | BATTERY PACKING MS |
| 6 | 300550 | SCREW ASSEMBLY |
| 7 | 305610 | DRIVE MOTOR |
| 8 | 052810 | SOLID STATE CONTROLLER |
| 9 | 400230 | RUBBER GUARD ASSEMBLY |
| 10 | 305770 | MOTOR GUARD |
| 11 | 305771 | SPLASH GUARD |
| 12 | 307820 | AXLE |
| 13 | 050060 | WASHER 3/4 SAE |
| 14 | 301320 | WHEEL 8" |
| 15 | 050110 | COTTER PIN 1/8 x 1 ZINC |
| 16 | 101400 | BOTTOM FELT |
| 17 | 101410 | FELT TOP |
| 18 | 051330 | WHEEL CASTER 3" 4"SWIVEL |
| 19 | 305810 | DOLLY ATTACHMENT |
| 20 | 300010 | INNER FRAME FINAL WELD M-1 |
| 21 | 300020 | OUTER FRAME FINAL WELD M-1 |
| 22 | 102320 | TOP GUARD M-1 |
| 23 | 052970 | STEEL ROLLER WHEEL |
| 24 | 300733 | HOOK BAR |
| 25 | 051705 | FUSE 10 AMP AGC |
| 26 | 050210 | PUSH BUTTON SWITCH |
| 27 | 052690 | FUSE HOLDER |
| 28 | 050380 | CHARGE RECEPTACLE |
| 29 | 301522 | BUZZER ASSEMBLY |
| 30 | 051425 | GASKET - CIRCUIT BREAKER |
| 31 | 051311 | BATTERY TERMINAL COVER LH MS |
| 32 | 051312 | BATTERY TERMINAL COVER RH MS |

# MODEL M-1
# REPLACEMENT COMPONENT LIST

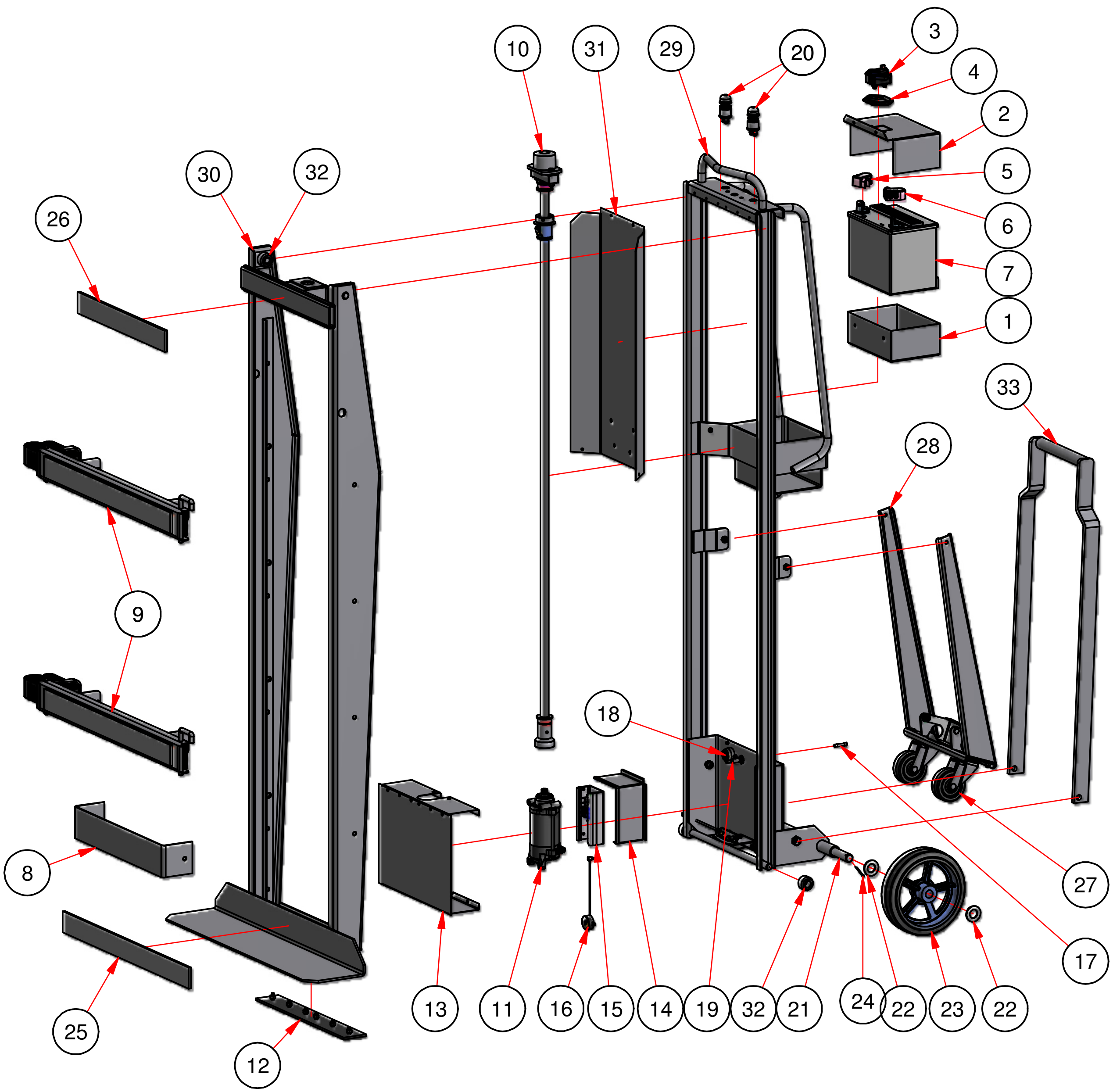
PN 010500 Rev.C1
Eng. 02/ 28/ 11




| PARTS LIST | | |
|---|---|---|
| ITE | PART No | DESCRIPTION |
| 1 | 300110 | INSIDE FRAME |
| 2 | 300120 | OUTER FRAME |
| 3 | 302470 | TOP GUARD M-2B |
| 4 | 300550 | SCREW ASSEMBLY |
| 5 | 305610 | MOTOR DRIVE |
| 6 | 400230 | BOTTOM RUBBER GUARD |
| 7 | 051705 | FUSE 10 AMP AGC |
| 8 | 305770 | MOTOR GUARD |
| 9 | 050210 | PUSH BUTTON SWITCH |
| 10 | 052970 | STEEL ROLLER WHEEL |
| 11 | 307820 | WHEEL AXLE M-1 |
| 12 | 050060 | WASHER 3/4 |
| 13 | 301320 | WHEEL 8" |
| 14 | 050110 | COTTER PIN |
| 15 | 101960 | BOTTOM FELT |
| 16 | 101410 | TOP FELT |
| 17 | 051330 | CASTER WHEEL |
| 18 | 305810 | DOLLY ATTACHMENT |
| 19 | 300730 | HOOK BAR |
| 20 | 400084 | STRAPBAR M-SERIES |
| 21 | 306010 | BATTERY COVER BOTTOM |
| 22 | 051310 | BATTERY 12V 32A |
| 23 | 306000 | BATTERY COVER TOP |
| 24 | 303000 | FRAME STIFFENER |
| 25 | 100771 | SPLASH GUARD MS |
| 26 | 051810 | SOLID STATE CONTROLLER |
| 27 | 051364 | CIRCUIT BREAKER 100A |
| 28 | 051425 | GASKET - CIRCUIT BREAKER |
| 29 | 052690 | FUSE HOLDER HOLE MOUNT |
| 30 | 050380 | CHARGER RECEPTACLE |
| 31 | 051311 | TERMINAL COVER LH |
| 32 | 051312 | TERMINAL COVER RH |
| 33 | 301522 | BUZZER ASSEMBLY |

# MODEL M-2-B
# REPLACEMENT COMPONENT LIST

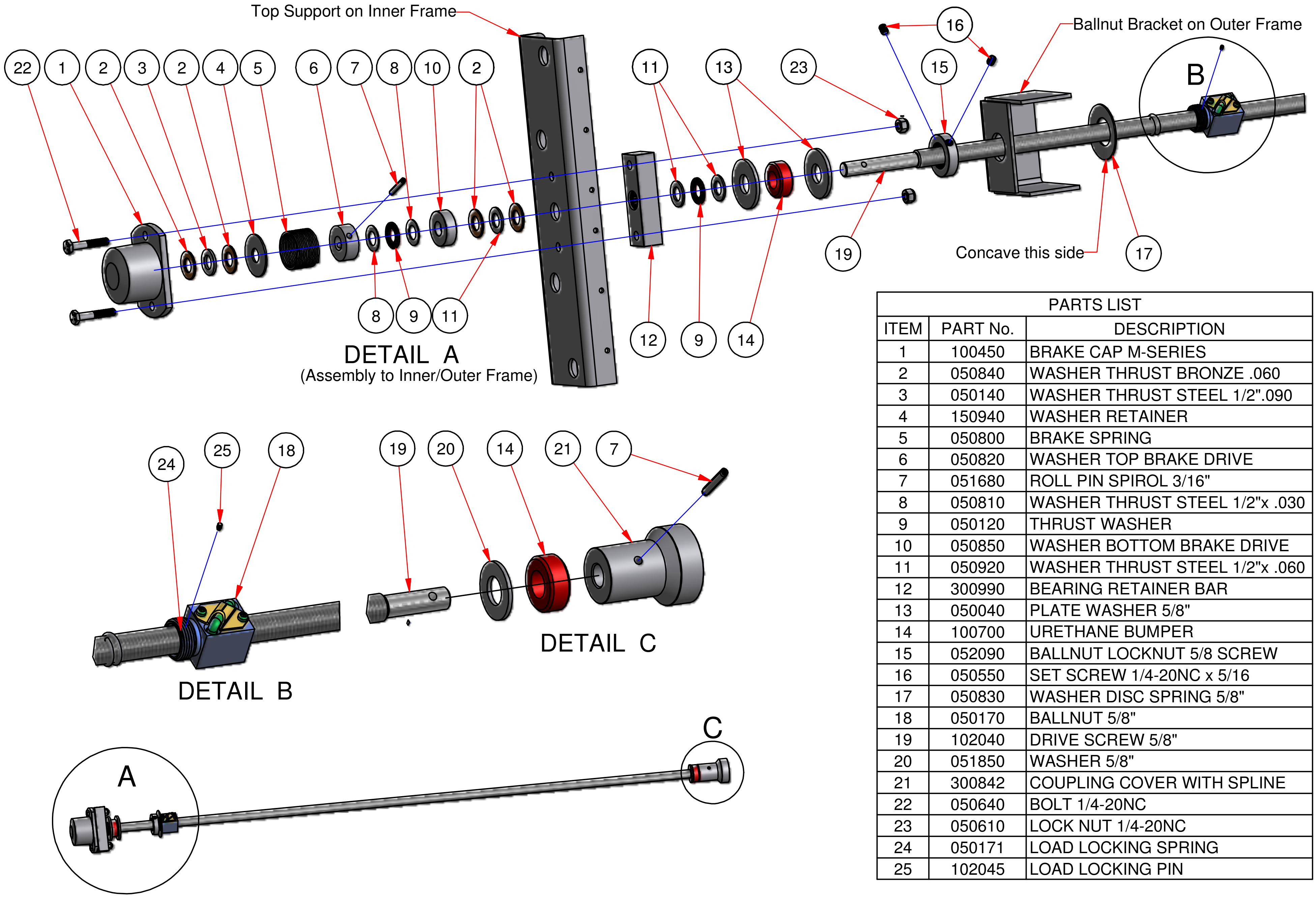
PN 010510 Rev.C1
Eng. 02/ 28/ 11




| PARTS LIST | | | |
|---|---|---|---|
| ITEM | QTY | PART No | DESCRIPTION |
| 1 | 1 | 306010 | BATTERY COVER BOTTOM |
| 2 | 1 | 306000 | BATTERY COVER TOP |
| 3 | 1 | 051364 | CIRCUIT BREAKER 100A |
| 4 | 1 | 051425 | GASKET |
| 5 | 1 | 051312 | TERMINAL COVER RH |
| 6 | 1 | 051311 | TERMINAL COVER LH |
| 7 | 1 | 051310 | BATTERY 12V 32Ah SEALED |
| 8 | 1 | 303000 | OUTER FRAME STIFFENER MS |
| 9 | 2 | 400084 | STRAPBAR M-SERIES |
| 10 | 1 | 300570 | SCREW ASSEMBLY M-2C |
| 11 | 1 | 305610D | MOTOR ASSEMBLY M-SERIES |
| 12 | 1 | 400230 | BOTTOM RUBBER GUARD |
| 13 | 1 | 305770 | MOTOR GUARD |
| 14 | 1 | 305771 | SPLASH GUARD |
| 15 | 1 | 052810 | SOLID STATE CONTROLLER |
| 16 | 1 | 301522 | BUZZER ASSEMBLY |
| 17 | 1 | 051705 | FUSE 10 AMP AGC |
| 18 | 1 | 050380 | CHARGER RECEPTACLE |
| 19 | 1 | 052690 | FUSE HOLDER HOLE MOUNT |
| 20 | 2 | 050210 | SWITCH PUSH BUTTON |
| 21 | 1 | 307820 | BOTTOM WHEEL AXLE |
| 22 | 4 | 050060 | WASHER 3/4 SAE |
| 23 | 2 | 301320 | WHEEL CAST SPOKE 8" |
| 24 | 2 | 050110 | COTTER PIN 1/8 x 1 ZINC |
| 25 | 1 | 101960 | FELT BOTTOM |
| 26 | 1 | 101410 | FELT TOP |
| 27 | 2 | 051330 | CASTER WHEEL |
| 28 | 1 | 305810 | DOLLY ATTACHMENT |
| 29 | 1 | 300112 | INNER FRAME |
| 30 | 1 | 300122 | OUTER FRAME |
| 31 | 1 | 101030 | TOP GUARD M-2C |
| 32 | 4 | 052970 | STEEL ROLLER WHEEL |
| 33 | 1 | 300733 | HOOK BAR |

# MODEL M-2C
# REPLACEMENT COMPONENT LIST

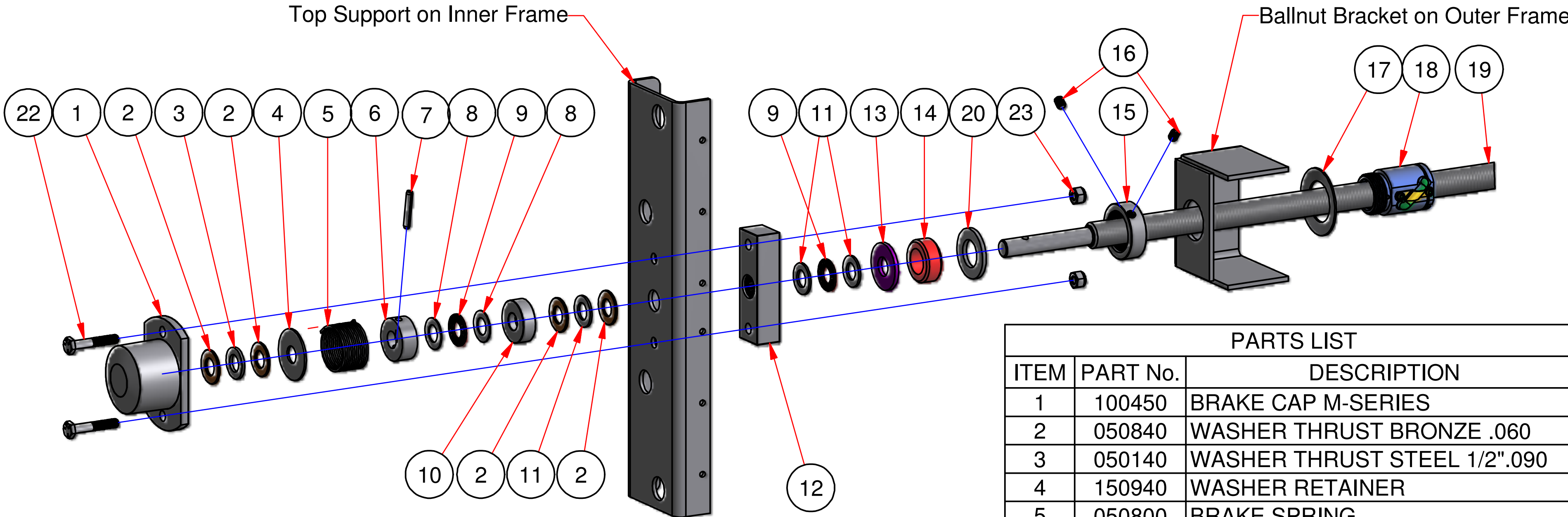
PN 010540 Rev.C1
Eng. 02/ 28/ 11



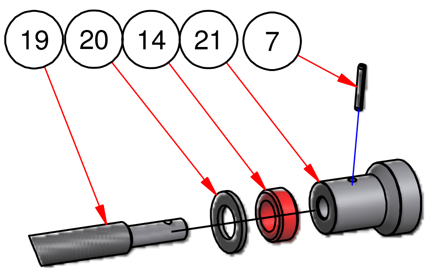

| PARTS LIST | | |
|---|---|---|
| ITEM | PART No. | DESCRIPTION |
| 1 | 100450 | BRAKE CAP M-SERIES |
| 2 | 050840 | WASHER THRUST BRONZE .060 |
| 3 | 050140 | WASHER THRUST STEEL 1/2".090 |
| 4 | 150940 | WASHER RETAINER |
| 5 | 050800 | BRAKE SPRING |
| 6 | 050820 | WASHER TOP BRAKE DRIVE |
| 7 | 051680 | ROLL PIN SPIROL 3/16" |
| 8 | 050810 | WASHER THRUST STEEL 1/2"x .030 |
| 9 | 050120 | THRUST WASHER |
| 10 | 050850 | WASHER BOTTOM BRAKE DRIVE |
| 11 | 050920 | WASHER THRUST STEEL 1/2"x .060 |
| 12 | 300990 | BEARING RETAINER BAR |
| 13 | 050040 | PLATE WASHER 5/8" |
| 14 | 100700 | URETHANE BUMPER |
| 15 | 052090 | BALLNUT LOCKNUT 5/8 SCREW |
| 16 | 050550 | SET SCREW 1/4-20NC x 5/16 |
| 17 | 050830 | WASHER DISC SPRING 5/8" |
| 18 | 050170 | BALLNUT 5/8" |
| 19 | 102040 | DRIVE SCREW 5/8" |
| 20 | 051850 | WASHER 5/8" |
| 21 | 300842 | COUPLING COVER WITH SPLINE |
| 22 | 050640 | BOLT 1/4-20NC |
| 23 | 050610 | LOCK NUT 1/4-20NC |
| 24 | 050171 | LOAD LOCKING SPRING |
| 25 | 102045 | LOAD LOCKING PIN |

# SCREW ASSEMBLY M-1, M-2B
PN 300550

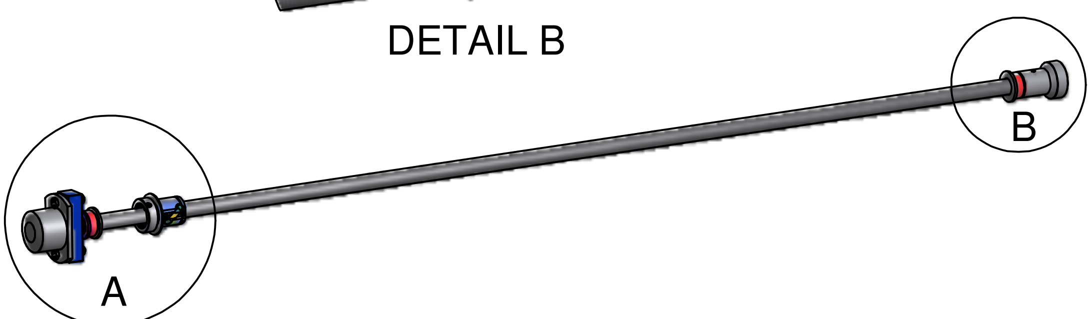
PN 010520 Rev.C1
Eng. 02/ 28/ 11




DETAIL A
(Assembly to Inner/Outer Frame)




DETAIL B




| PARTS LIST | | |
|---|---|---|
| ITEM | PART No. | DESCRIPTION |
| 1 | 100450 | BRAKE CAP M-SERIES |
| 2 | 050840 | WASHER THRUST BRONZE .060 |
| 3 | 050140 | WASHER THRUST STEEL 1/2".090 |
| 4 | 150940 | WASHER RETAINER |
| 5 | 050800 | BRAKE SPRING |
| 6 | 050820 | WASHER TOP BRAKE DRIVE |
| 7 | 051680 | ROLL PIN SPIROL 3/16" |
| 8 | 050810 | WASHER THRUST STEEL 1/2"x .030 |
| 9 | 050120 | BEARING THRUST STEEL |
| 10 | 050850 | WASHER BOTTOM BRAKE DRIVE |
| 11 | 050920 | WASHER THRUST STEEL 1/2"x .060 |
| 12 | 300990 | BEARING RETAINER BAR |
| 13 | 055640 | PLATE WASHER 1/2" |
| 14 | 101320 | URETHANE BUMPER 1/2 x 3/4 |
| 15 | 052091 | BALLNUT LOCKNUT 3/4 SCREW |
| 16 | 050550 | SET SCREW 1/4-20NC x 5/16 |
| 17 | 102830 | WASHER DISC SPRING 3/4" |
| 18 | 050180 | BALLNUT 3/4" |
| 19 | 102460 | DRIVE SCREW 3/4" |
| 20 | 050060 | WASHER 3/4" |
| 21 | 300842 | COUPLING COVER WITH SPLINE |
| 22 | 050640 | BOLT 1/4-20NC |
| 23 | 050610 | LOCK NUT 1/4-20NC |

**SCREW ASSEMBLY M-2C**
PN 300570

PN 010530 Rev.C1
Eng. 02/ 28/ 11

# Procedure for Repairing the M-Series Drive Screw Assembly

**NOTE**: *Read all instructions carefully before attempting to make repairs to any part of the drive screw assembly.*

## Assembly

1. Place machine on a suitable work bench, with the machine resting on its wheels and rear handles (toeplate up). Activate the unit until it is extended approximately half-way. Disconnect the power supply by way of the circuit breaker.

2. Refering to the Screw Assembly Drawings, remove the two 1/4"bolts(22) and nuts(23). Proceed to remove the brake cap (1), two bronze thrust washers (2), steel washer(3), washer retainer(4), and brake spring(5).

3. Drive out the 3/16"roll pin(7) taking care not to bend the drive screw shaft. Place a suitable support underneath the brake drive top washer(6)for this operation.

4. Remove the brake drive top washer(6), two steel thrust washers(8), thrust washer(9), brake drive bottom washer(10), two bronze thrust washer(2) and the steel thrust washer(11).
   NOTE: At this point, if it is intended to replace the Bearing Overide or Ballnut, complete those procedures first before continuing with the brake reassembly.

5. As per the srew assembly drawing, replace the brake assembly components (Brake Assembly Kit P/N 400150) in reverse as follows:
   Items 2-11-2-10-8-9-8-6-7-5-4-2-3-2
   During assembly, place a few drops of light machine oil on the thrust bearing(9) only. Remember to support the brake drive top washer(6) when installing the 3/16" roll pin(7).

6. Install the brake cap(1) and insert the 1/4"bolts(22) and fasten with the nuts(23).

## Installation of Override Bearing Kit, Ballnut or Screw Removal

NOTE: For this procedure, it will be necessary to remove all accessories like skid plate, extended toeplate, screw guard, strapbars, etc.

1. Remove the brake assembly as outlined in the Brake Assembly Procedure.

2. Remove the motor guard. Loosen (remove if necessary) the two bolts holding the motor support to the mounting bracket. Pull the motor away from the screw assembly to disengage.

3. Loosen the set screws(16) in the ballnut locknut(15). Unfasten the locknut from the ballnut(18). The outer frame and inner frame are now disengaged

4. Move the drive screw(19) enough to allow removal of the override bearing components. Remove the bearing retainer bar(12), two steel thrust washers(11), thrust washer(9), plate washers(13), and the urethane bumper(14).
   NOTE: At this point, if it is intended to replace the Ballnut or removing the Drive Screw for service or replacement, complete those procedures first before continuing with the override bearing replacement.

5. As per the screw assembly drawing, replace the override bearing components(Bearing Override Kit PN 400160) in reverse order as follows:
   Items: 13-14-13-11-9-11-12
   Apply a few drops of light machine oil to thrust bearing(9) and the roller bearing in the bearing retainer bar(12).

6. Guide the drive screw(19) back through the inner frame top support and engage the spline coupling (21) with the motor. Re-install the motor mounting bolts but do not tighten. Reposition the outer frame and/or ballnut so they engage through the ballnut bracket leaving the unit extended approximately halfway.

7. Thread the ballnut locknut(15) onto the ballnut(18), but do not tighten.

8. Replace the brake assembly components as per the Brake Assembly instruction step 5. Re-install the brake cap(1) with 1/4"bolts and nuts(22/23) but do not tighten.

9. Reactivate the electrical power through the circuit breaker and operate the machine to full extension. Push the motor/motor support towards the screw so the skirt on thesplined coupling(21) is 1/32" from the motor. Tighten the motor mounting bolts.

10. Operate the unit to its fully retracted position. Tighten the brake cap(1) bolts and nuts(22/23).

11. Tighten the ballnut locknut(15) to the ballnut(18), hand tight only. Tighten the set screws(16).
    NOTE: The ballnut must spin only when the unit is run to its fully extended or retracted limits. If it does not, adjust the tightness of the ballnut locknut.

12. Re-install the motor guard and strapbar(s). Re-attach any removed accessories.

# Procedure for Repairing the L-Series Drive Screw Assembly

## Drive Screw Removal & Installation

1. Remove the brake assembly as outlined in the Brake Assembly procedure.

2. Remove the override bearing assembly as outlined in the Override Bearing Assembly procedure.

3. Apply a band of tape around the drive screw(19) at each end of the ballnut(18). This will prevent the ballnut from disengaging the drive screw until the appropriate time. The screw may now be removed in the direction of the motor. Remove the spring disc washer(17).
NOTE: At this point, if it is intended to remove the Ballnut(18) for replacement, complete the Ballnut Replacement procedure first, before re-installing the drive screw.

4. To re-install the Drive Screw(19), place the spring disc washer(17) over the ballnut thread, insuring the concave side of the washer is oriented away from the square body of the ballnut. Insert the drive screw through the ballnut bracket on the outside frame from the direction of the motor. Remove the tape either side of the ballnut, if applied.

5. Continue the reassembly process by returning to step 5 of the Override Bearing procedure.

## To enjoy "Trouble Free" *PowerMate®* operations, remember the following:

1. Keep the battery fully charged.

2. Follow the maintenance schedule and especially keep the screw clean and oiled with a light machine oil.

3. ***PowerMate®*** equipment is designed to take advantage of balance and leverage principles. Work performed will be easier and safer when load is maintained in well-balanced position. Operator should locate balanced position of unfamiliar load prior to undertaking lifting or lowering operations.

4. New operators should be trained on light loads under 400 lbs. (182 kg) advancing to heavy loads after practice.

5. Never unstrap load with the wheels up.

6. Do not compress top or bottom red bumper under load.

7. Never transport or lay the machine down on the battery box.

8. Ensure override bearing is properly adjusted on the screw.

9. Keep nuts and bolts tight on the dolly attachment and the hook bar.

10. Keep both hands on handles when operating.

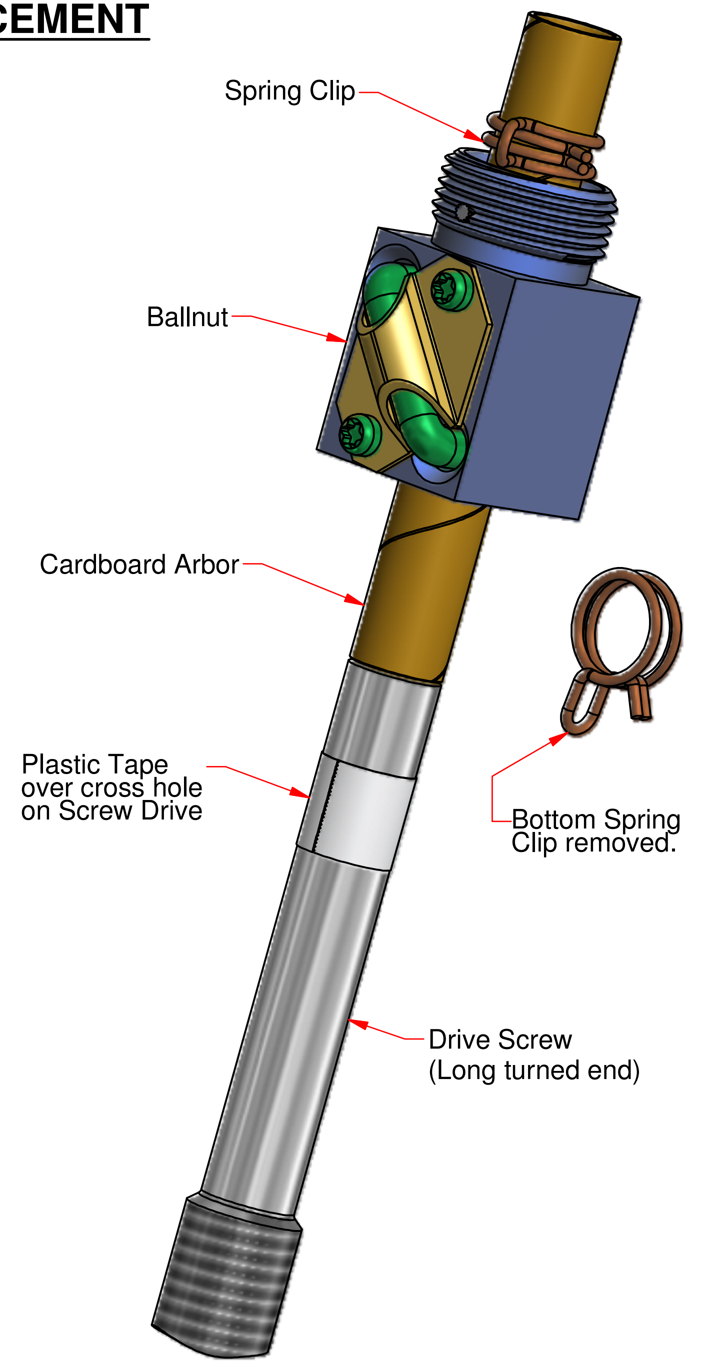
11. When climbing stairs, keep:
    (A) Wheels at back of stair tread, &
    (B) Heel of machine back a safe distance.

12. It is essential for reliability, and to conform with current Health & Safety legislation, that your ***PowerMate®*** is maintained regularly. We recommend a bi-annual Service contract with L P International Inc.

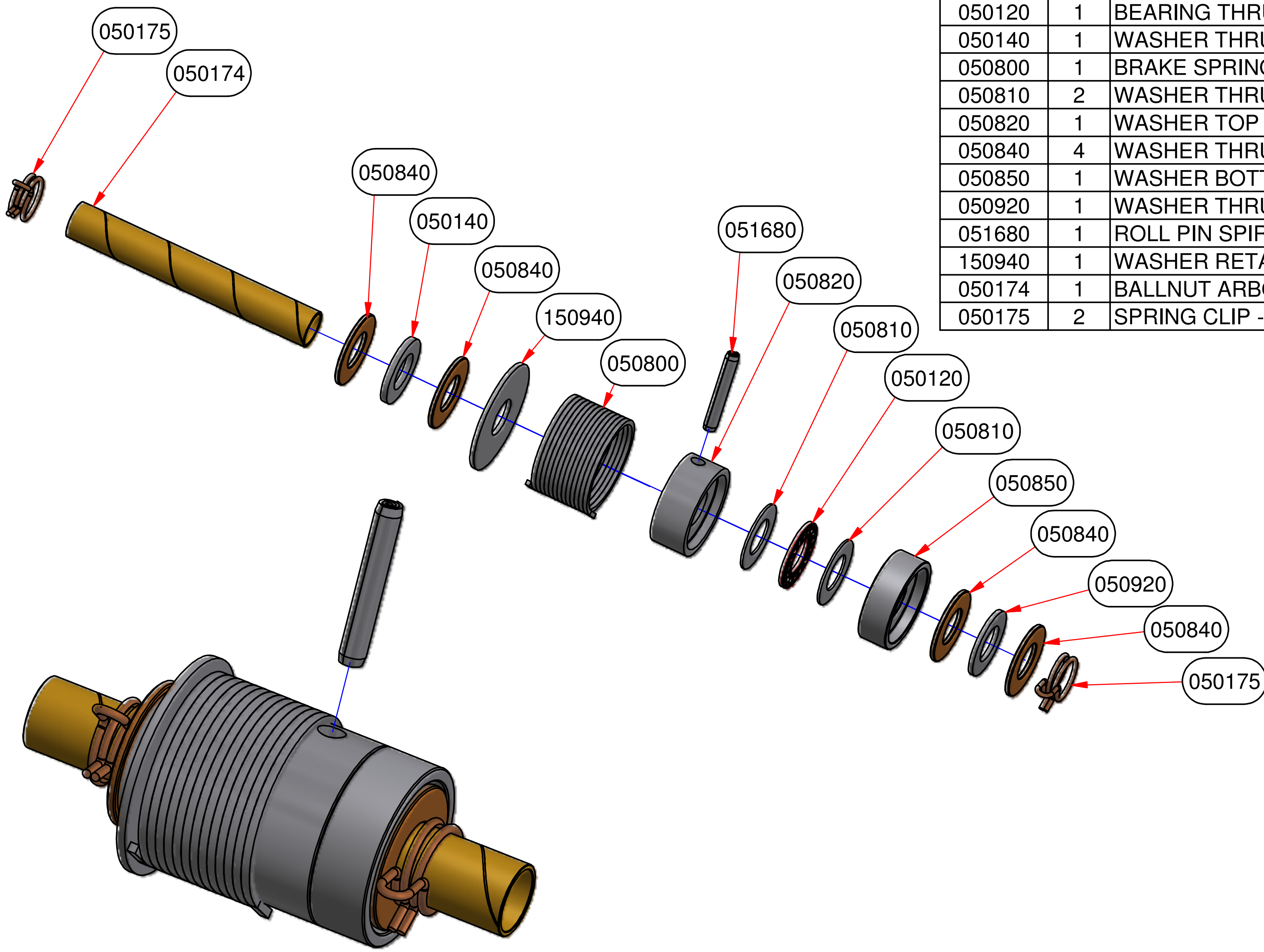
# BALLNUT REMOVAL AND REPLACEMENT

**PROCEDURE:**

1. To begin, the screw assembly must be removed from the unit. Follow the procedure for Drive Screw removal and replacement.
2. Remove the tape from the drive screw that is keeping the ballnut in position, if installed.
3. Apply one layer of thin plastic tape banding around the long turned end of the screw over the cross hole. This is the end that the ballnut will be removed.
4. Stand the drive screw vertically with the long turned end up. Thread the ballnut up the screw until it is completely disengaged from the thread. The tape over the cross hole prevents the balls in the ballnut from falling out into the cross hole.
5. Place a Cardboard Arbor firmly against the end of the screw, insuring that it is centered and square, and slide the ballnut up onto the card-board arbor. Attach spring clips to both ends of the arbor to retain the ballnut.
6. To install a ballnut, the reverse happens. Remove the spring clip from the cardboard arbor on the square end of the ballnut. Be sure the arbor does not disengage the arbor or all the balls in the ballnut will fall out.
7. Place the end of the arbor firmly, centered and square, onto the long turned end of the drive screw. Slide the ballnut off the arbor onto the screw, over the tape and engage the drive screw thread. Allow the ball-nut to spin down the screw to approximately halfway along its length. Band tape around the screw at both ends of the ballnut to keed the ball-nut in position.
8. Remove the plastic tape from the cross hole.
9. Return to the instruction for the installation of the Drive Screw, step 4.



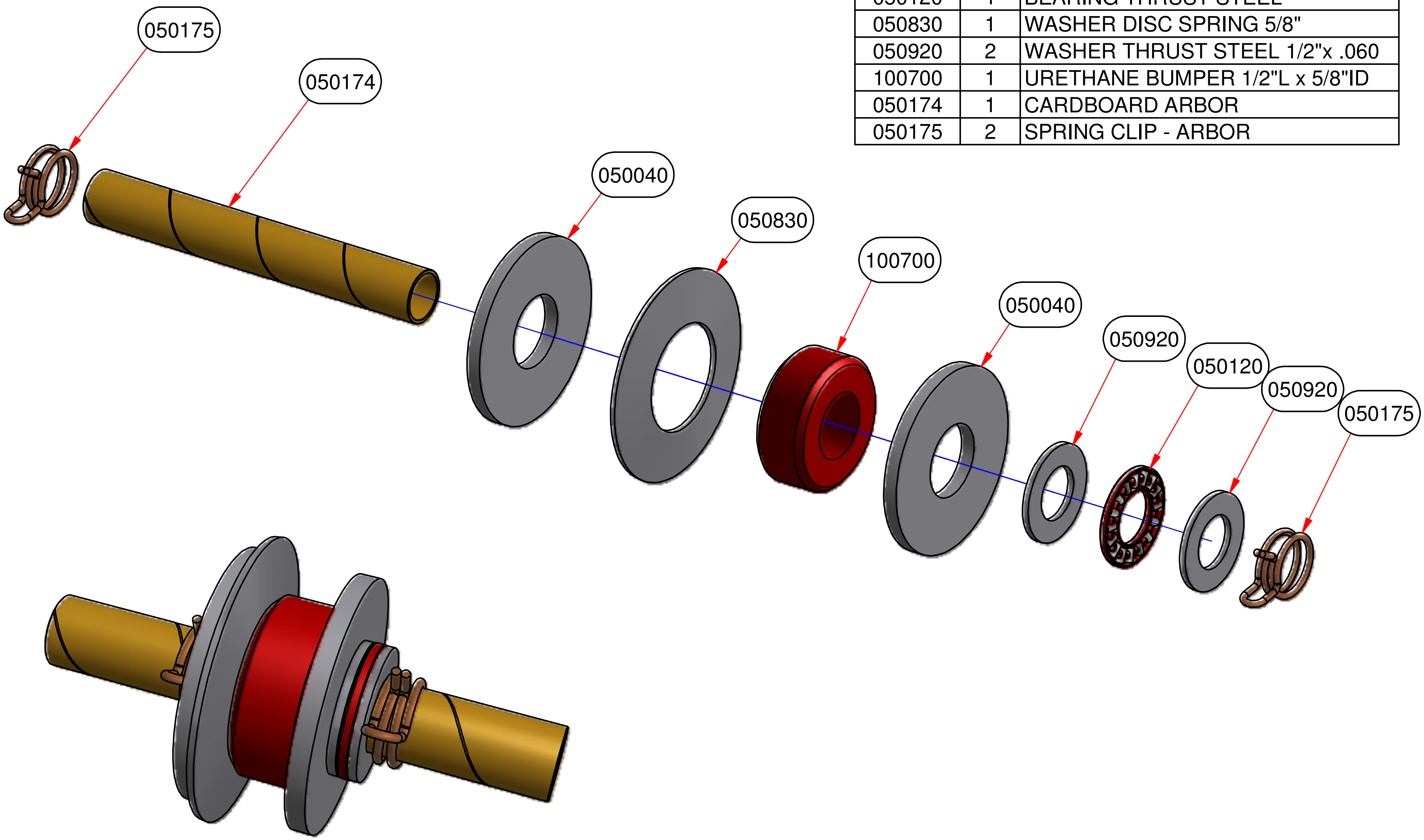
| PARTS LIST | | |
|---|---|---|
| PART No. | QTY | DESCRIPTION |
| 050120 | 1 | BEARING THRUST STEEL |
| 050140 | 1 | WASHER THRUST STEEL 1/2".090 |
| 050800 | 1 | BRAKE SPRING |
| 050810 | 2 | WASHER THRUST STEEL 1/2"x .030 |
| 050820 | 1 | WASHER TOP BRAKE DRIVE |
| 050840 | 4 | WASHER THRUST BRONZE .060 |
| 050850 | 1 | WASHER BOTTOM BRAKE DRIVE |
| 050920 | 1 | WASHER THRUST STEEL 1/2"x .060 |
| 051680 | 1 | ROLL PIN SPIROL 3/16"x 1 1/8" |
| 150940 | 1 | WASHER RETAINER |
| 050174 | 1 | BALLNUT ARBOR |
| 050175 | 2 | SPRING CLIP - ARBOR |




**BRAKE ASSEMBLY KIT**
**PN 400150**

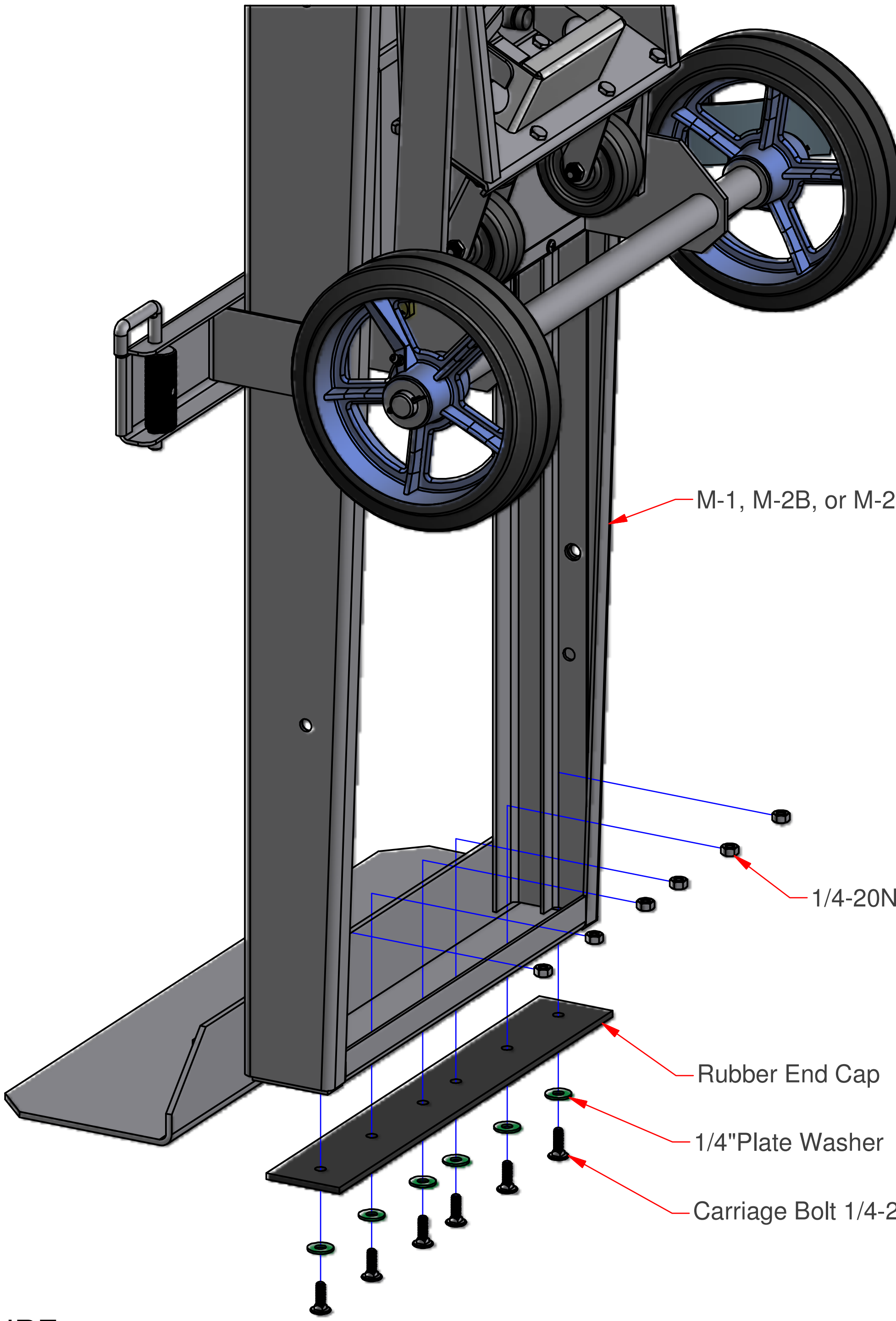
PN 010590 Rev.C.1
Assy No. 400150
Eng. 01/ 20/ 11

| PARTS LIST | | |
|---|---|---|
| PART No. | QTY | DESCRIPTION |
| 050040 | 2 | WASHER 5/8"PLATE ZINC |
| 050120 | 1 | BEARING THRUST STEEL |
| 050830 | 1 | WASHER DISC SPRING 5/8" |
| 050920 | 2 | WASHER THRUST STEEL 1/2"x .060 |
| 100700 | 1 | URETHANE BUMPER 1/2"L x 5/8"ID |
| 050174 | 1 | CARDBOARD ARBOR |
| 050175 | 2 | SPRING CLIP - ARBOR |




**BEARING OVERRIDE KIT**
**PN 400160**

PN 010600 Rev.C.1
Assy No. 400160
Eng. 01/20/11



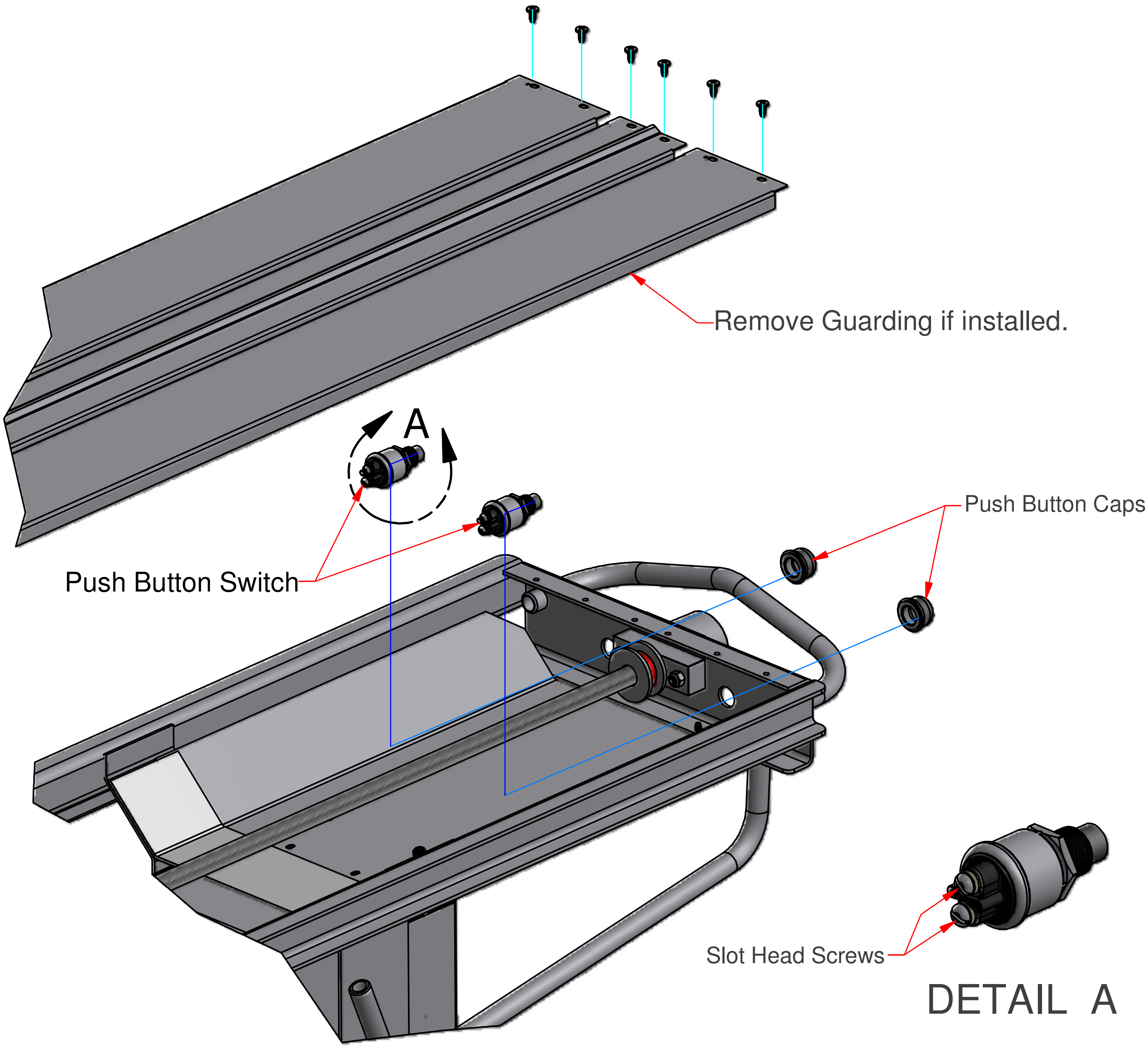

PROCEDURE:

1. Extend Outer Frame approximately 20", tipping the PowerMate back to rest on the rear handles and wheels. Note: Unit shown vertically for visibilty only.
2. Remove the 1/4"Nuts with a 7/16"socket (preferably deep socket or with extension), and ratchet wrench.
3. Remove the Carriage Bolts, Washers, and Rubber End Cap.
4. The replacement Rubber Guard comes with the components assembled finger tight. Remove the 1/4"Nuts and place the Rubber End Cap on the bottom of the outer frame, inserting the 1/4"Carriage Bolts in the holes in the outer frame.
5. Assemble the (6)1/4"Nuts to the 1/4"Carriage Bolts and tighten with the 7/16"wrench.

## BOTTOM RUBBER GUARD REPLACEMENT

Replacement Kit No. 400230

PN 010620 Rev.C1
Assembly 400230
Eng. 02/ 28/ 11



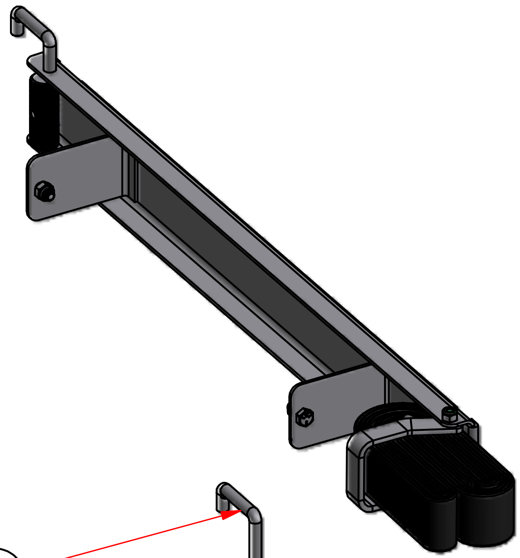

**PROCEDURE:**

1. Extend PowerMate Unit approximately 15". Rest unit on its rear handles and wheels. Remove fuse.

1a. Remove screw guarding if stalled -3 guards, 12 phillips head screw.

2. Remove Push Button Cap(s) using water pump pliers.
3. Slip Push Button Switch(es) out of mounting hole(s), wiring still connected.
4. Remove two screws at the base of the switch(es) to disconnect the wiring.
5. Attach the wires to the replacement Push Button(s) using 1/4"slot screw driver.
6. Insert Push Button(s) into mounting hole(s).
7. Install Push Button Cap(s) and tighten using water pump pliers.
8. Re-install fuse. Note: If screw guarding was installed, re-install prior to re-inserting fuse.

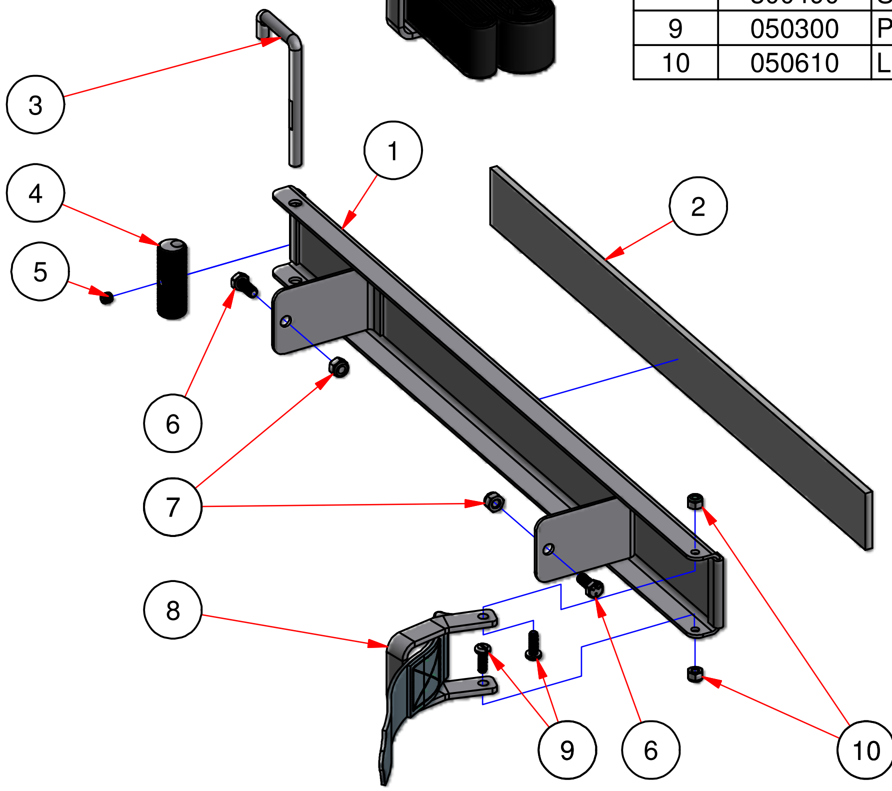
## PUSH BUTTON SWITCH REPLACEMENT M-SERIES



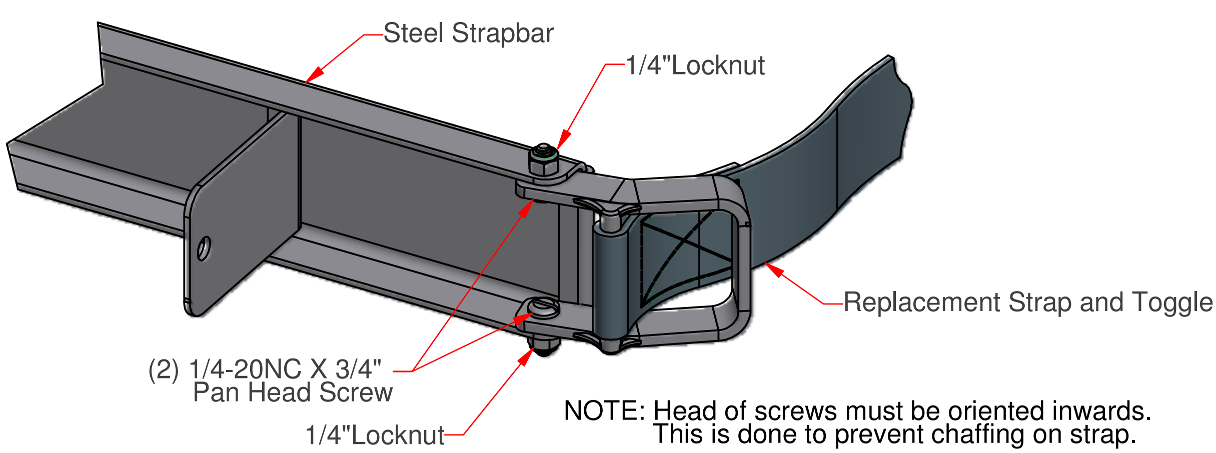
| PARTS LIST | | |
|---|---|---|
| ITEM | PART No. | DESCRIPTION |
| 1 | 305750 | STRAPBAR M-SERIES |
| 2 | 101960 | FELT STRAP BAR 1/4"x 2"x 23" |
| 3 | 302110 | CAM HANDLE |
| 4 | 310040 | CAM |
| 5 | 050990 | SET SCREW 5/16-18 x 5/16 |
| 6 | 050770 | BOLT 5/16-18 x 3/4" |
| 7 | 050620 | LOCK NUT 5/16-18NC |
| 8 | 310530 | STRAP 10' c/w TOGGLE |
| | 300500 | STRAP 12' c/w TOGGLE |
| | 300600 | STRAP 14' c/w TOGGLE |
| | 300490 | STRAP 16' c/w TOGGLE |
| 9 | 050300 | PAN HEAD SCREW 1/4-20x3/4 |
| 10 | 050610 | LOCK NUT 1/4-20NC |

STRAP BAR ASSEMBLIES:
400080S - 10 ft. Strap
400082S - 12 ft. Strap
400084S - 14 ft. Strap
400086S - 16 ft. Strap

REPLACEMENT STRAP/
TOGGLE KITS AVAILABLE
(Comes with fastener hardware):
400310 - 10 ft. Strap
400320 - 12 ft. Strap
400300 - 14 ft. Strap
400340 - 16 ft. Strap
NOTE: Washers in Kits
not required.




## STRAPBAR ASSEMBLY M-SERIES



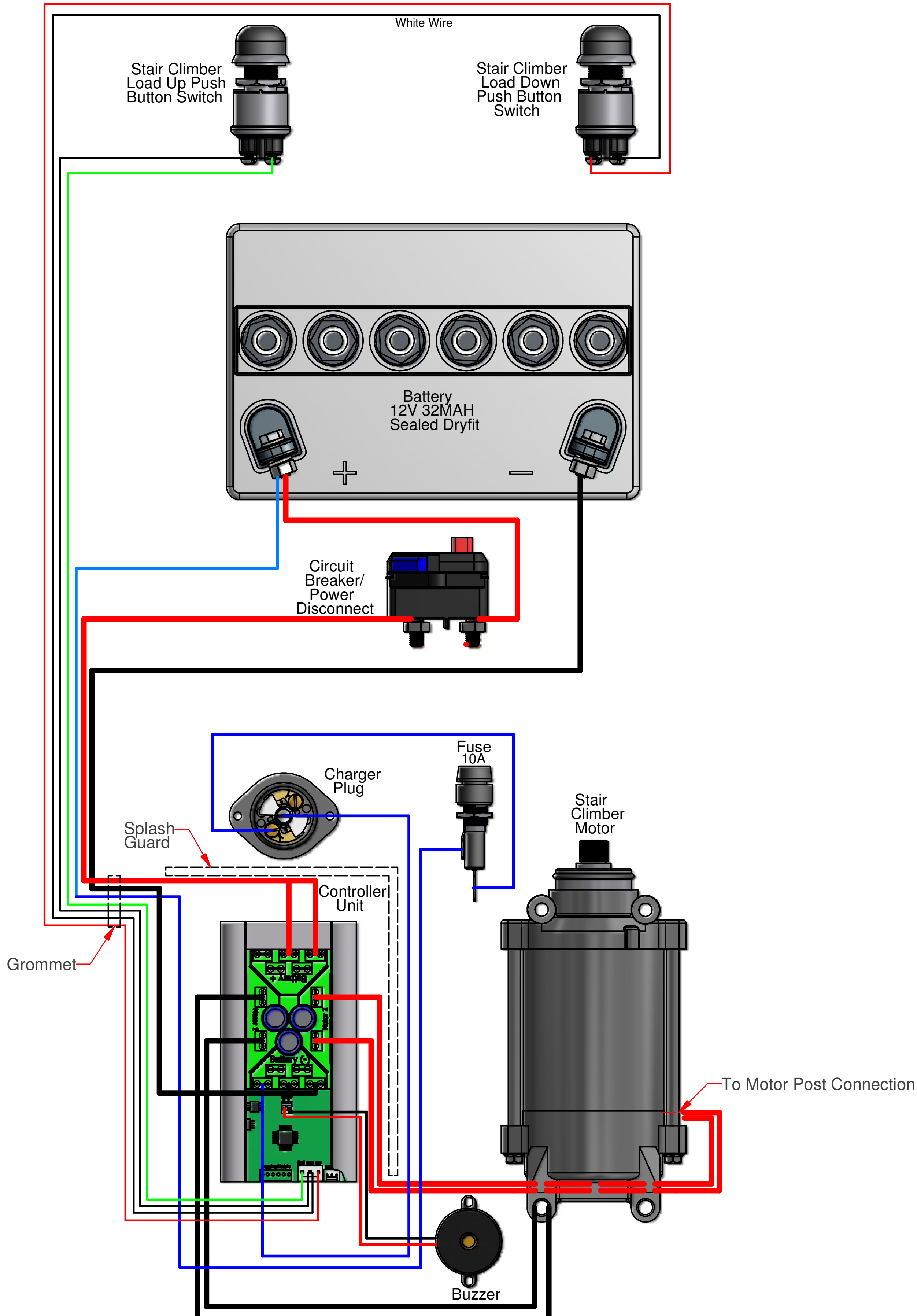

NOTE: Head of screws must be oriented inwards.
This is done to prevent chaffing on strap.

## REPLACEMENT STRAP INSTALLATION

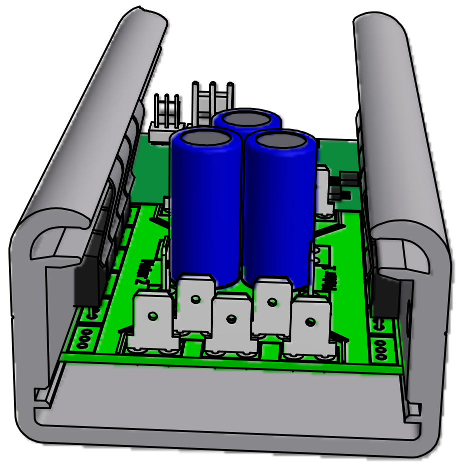
TOOLS REQUIRED: 7/16"Wrench, 5/16"Flat Screw Driver.

# ***POWERMATE®* M-SERIES WIRING DIAGRAM**

NOTE: Viewed from the front of the machine.




PN 010690 Rev.C1
Eng. 02/ 28/ 11



# STAIR CLIMBER SOLIDSTATE CONTROLLER

The Stair Climber Solid State Controller is a fully solid state Pulse Width Modulated (PWM) controller. Its advanced microprocessor based control implements a state-of the-art power MOSFET motor drive. Advanced features provide improved functionality, smoother operation, reduced mechanical stress, and protects against abuse and system faults.

## ADVANTAGES

- Reduced peak current reduces power loss in batteries, motor, and cabling.
- Reduced peak current reduces battery stress, increased service life.
- Reduced peak torque reduces mechanical stress, increasing service life of the gear train and motor.
- Smooth operation "feel" by controlled acceleration and deceleration (motor voltage ramp-up and ramp-down) eliminating jerkiness.
- Automatically slows speed with heavy loads, improving control and safety.
- Overload protection shuts off if lift load is too heavy.
- Protects batteries by limiting minimum loaded voltage to 8.5 volts.
- Internal protections for many types of internal and external faults.
- Protects controller by inhibiting operation if battery voltage is to high.
- Detects battery+ or battery- short to frame and inhibits motor operation.
- Limits continuous operation to <30 seconds. Control wiring fault protection.
- Alerts to low or excess control heating (from over-use).
- Alerts to overload or excess continuous run time (control fault).
- Alerts to battery+ or battery- short to frame.
- Alerts to internal controller faults.
- Low standby power of less than 20mA.

## SPECIFICATIONS

| | |
|---|---|
| Operating Voltage Range: | 8.5V - 14.4V |
| Maximum Voltage: | 16.0V (non-operating) |
| Over-voltage shut-off | 15.5V |
| Motor Current Limit: | 100 Amps (+10%, -5%) |
| Output Time Rating (@100 Amps): | 1.5Min. Minimum (ambient & initial temp<25ºC) |
| Continuous Current (Ambient<25ºC) | 65 Amps (75 Amps in Le-Series Unit) |
| Maximum Run without stop: | 25 to 30 Seconds (sofware limited) |
| Input control current, Max.(@ 13V) | 0.3 mA |
| Standby Current (@12.6V) | < 18mA |
| Buzzer or LED output: | 5 Volts, maximum 15mA |
| Standby Time (25% charge remains) | 40 days (start with 20 AH battery, fully charged) |
| Operating Temperature Range: | -25ºC to 50ºC |
| Storage Temperature Range: | -40ºC to 85ºC |

## FAULT ALERTS

Faults are indicated by a buzzer producing a series of beeps to indictate various faults as follows:

One Beep - Overload condition (too much weight on Unit) - **Reduce Load**
- Maximum run time (25-30sec.) exceeded - **Release and re-apply switch**

Two Beeps - Low Battery - **Recharge Battery**

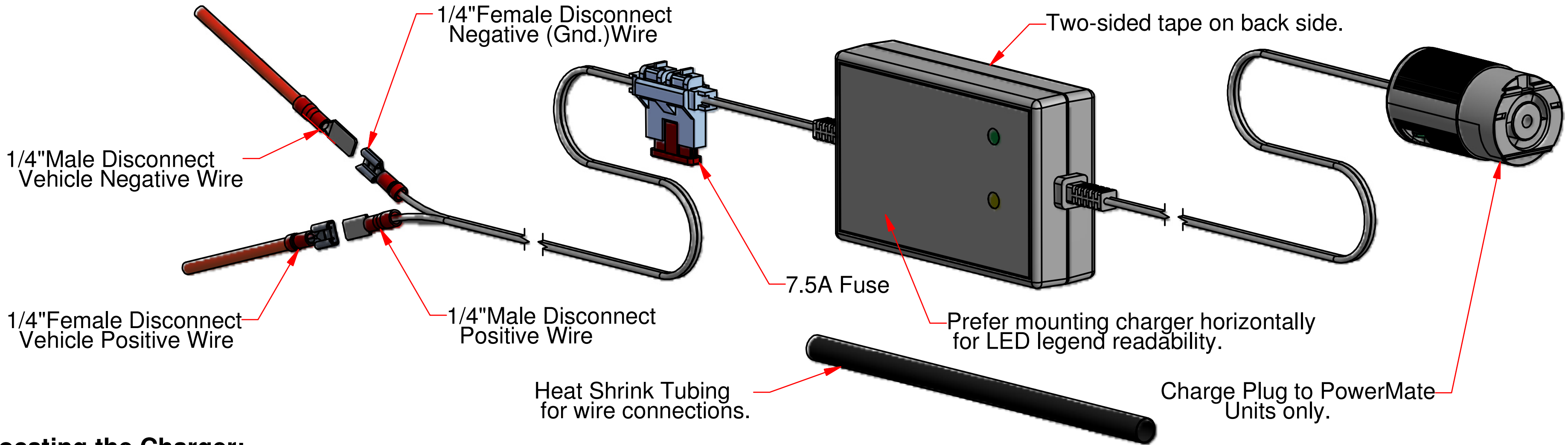
Three Beeps- Battery+ or Battery- shorted to frame. **HALT USE AND RETURN FOR REPAIR**
System Fault - **FAULTY UNIT -HALT USE AND RETURN FOR REPAIR**

Four Beeps - Overheating due to excessive use (many minutes) - **Allow five minutes to cool**

PN 010710 Rev.C.1
Component 052810
Eng. 01/ 20/ 11

# BATTERY CHARGER REMOTE INSTALLATION INSTRUCTION

CHARGER PN 400216




**Locating the Charger:**

Determine the position in the vehicle the PowerMate Unit will be using as it's charging station. The Battery Charger should be mounted in a position that will allow visibility of the charger and give easy access for the charger output wire (6 feet) and charge plug to the PowerMate Unit. The charger is equipped with adhesive backing for mounting to any flat surface.

NOTE:The mounting location should be free from moisture, dirt, and other contaminants. The charger should be mounted where the air is free to move around it. It should never be located in a box, compartment, or covered by any object. Doing so may result in excess heating and reduced performance. Do not expose the charger to any type of water spray. Do not immerse in water or any liquid. Should the charger become wet inside it should be disconnected immediately and returned to the manufacturer for refurbishment. Mount where the charger and its cables will not be physically damaged.

**Input Wiring:**

The installation will require a negative ground contact, and a positive wire coming from the vehicle battery. It is the installers responsibility to ensure the wire is of proper size capable of carrying at least 7 Amps continuous. In order to ensure maximum performance of the charger, the following wire sizes are recommended:

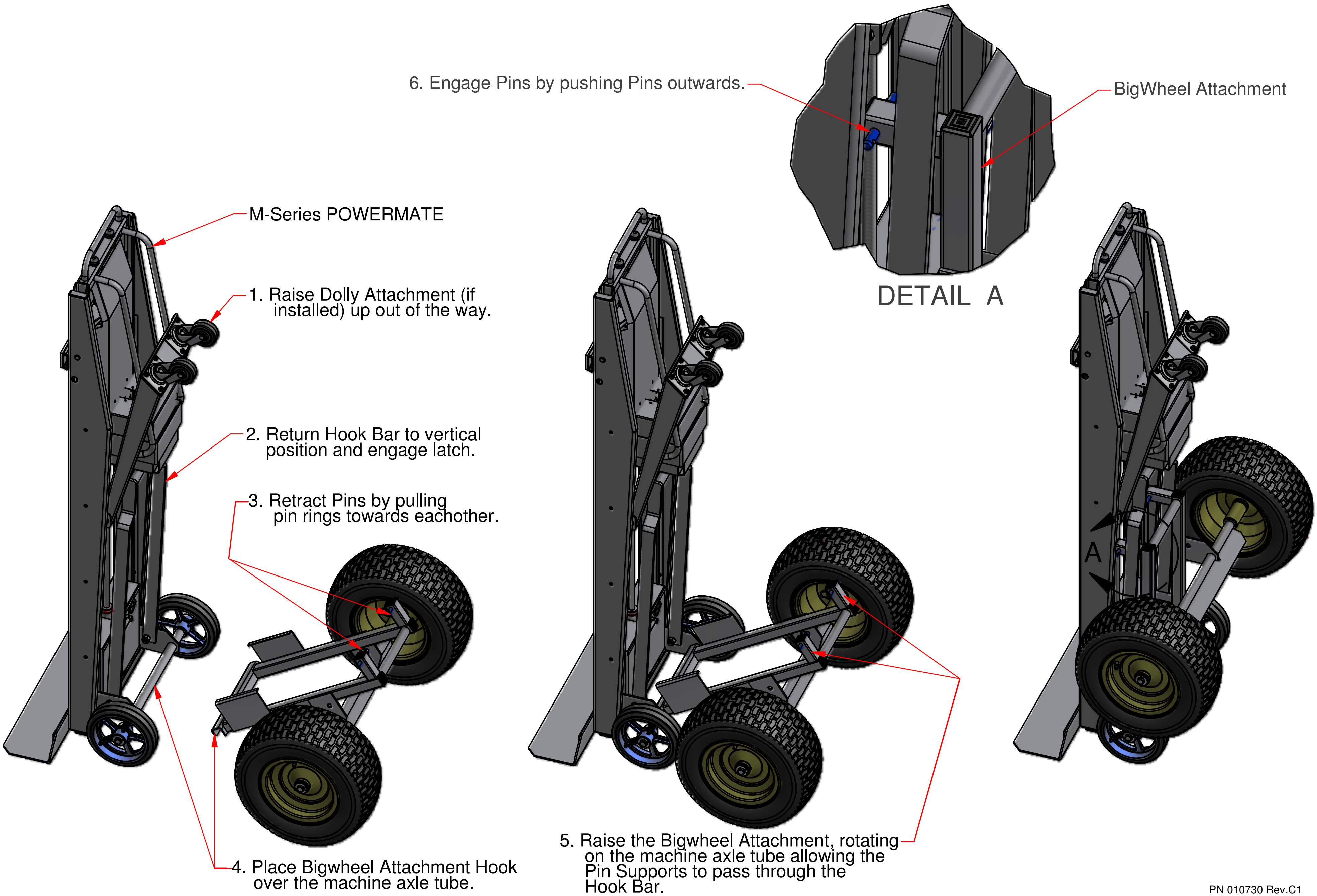
| EXTENSION LENGTH | MINIMUM WIRE GAUGE |
|---|---|
| Up to 10 feet | 12 AWG |
| 11 feet to 20 feet | 10 AWG |
| 21 feet to 30 feet | 8 AWG |
| Over 30 feet | Not recommended |

Attach a 1/4"Male Terminal Disconnect to the negative (Gnd.) wire and a 1/4"Female Terminal Disconnect to the positive wire. Slip on a piece of Heat Shrink Tubing (provided) over the lead in connections and connect the lead in wires to the mating charger input wires. Slide the Heat Shrink Tubing over the connections and shrink. Secure all wires to prevent damage. Wire loom material may be used. It is the installer's responsibility to ensure the wiring to the vehicle battery and negative ground point are properly protected and secure.

NOTE: Refer to the Battery Charger Manufacturers documents provided for safety and operating instructions. Take into consideration that this charger has been modified for remote location mounting.

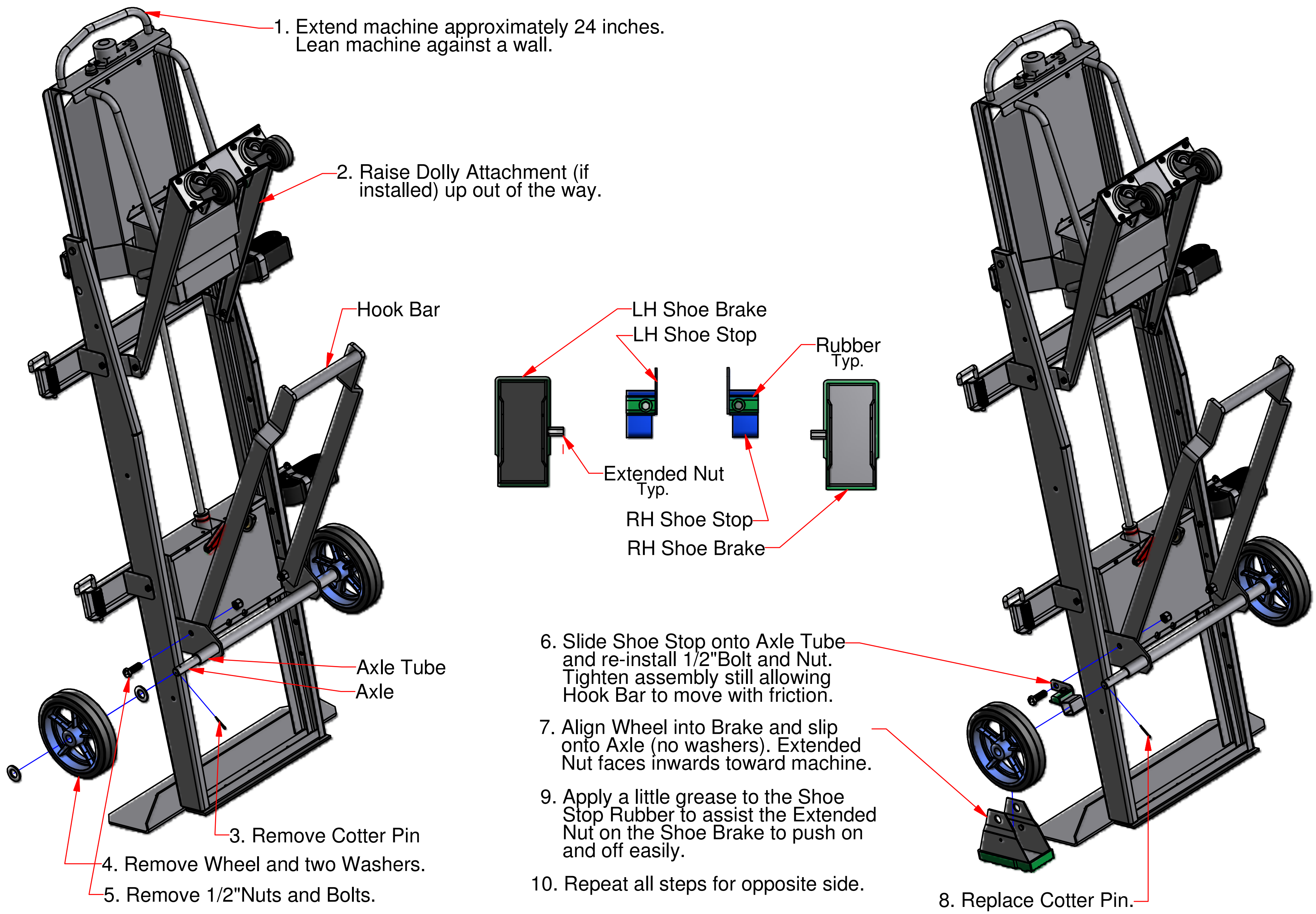
PN 010720 Rev.C.1
Assy. No. 400216
Eng. 01/ 20/ 11

# ***POWERMATE®*** BIGWHEEL ATTACHMENT INSTALLATION




PN 010730 Rev.C1
Assembly 404300
Eng 02/ 28/ 11

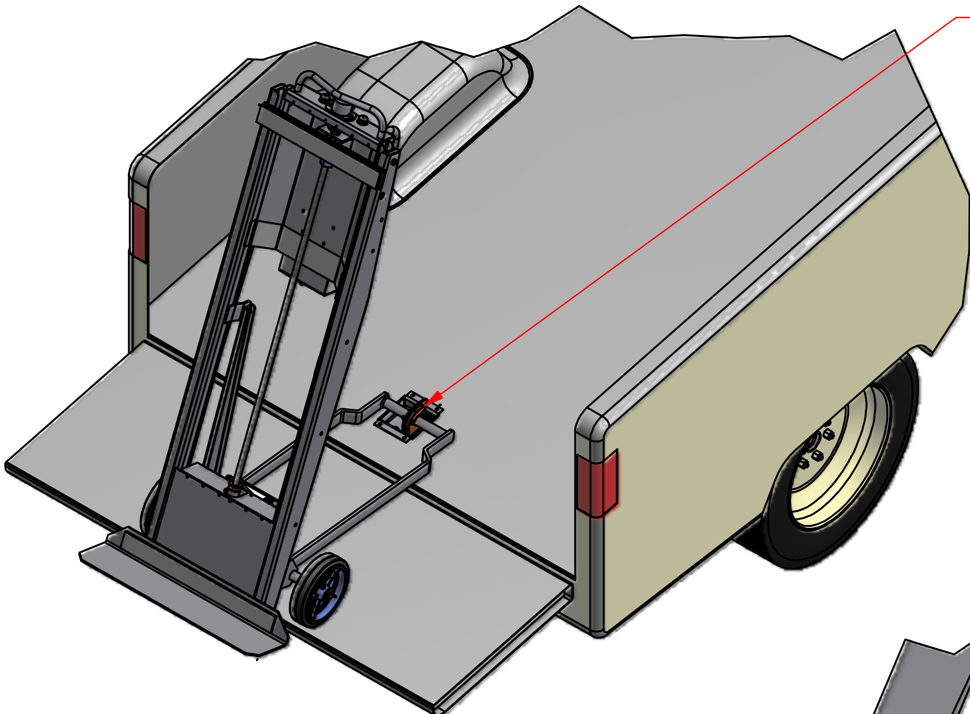
# *POWERMATE*® WHEEL BRAKE INSTALLATION




PN 010740 Rev.C1
Assy.No. 404100
Eng. 02/ 28/ 11

# HOOK BOX INSTALLATION

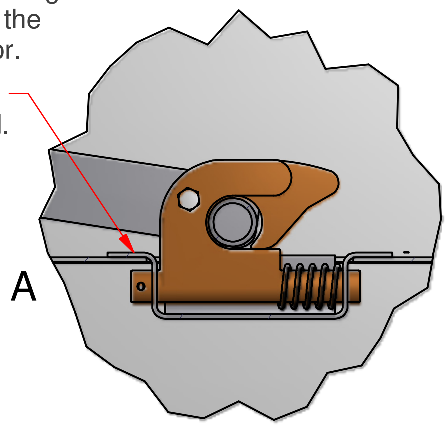
PN 400090

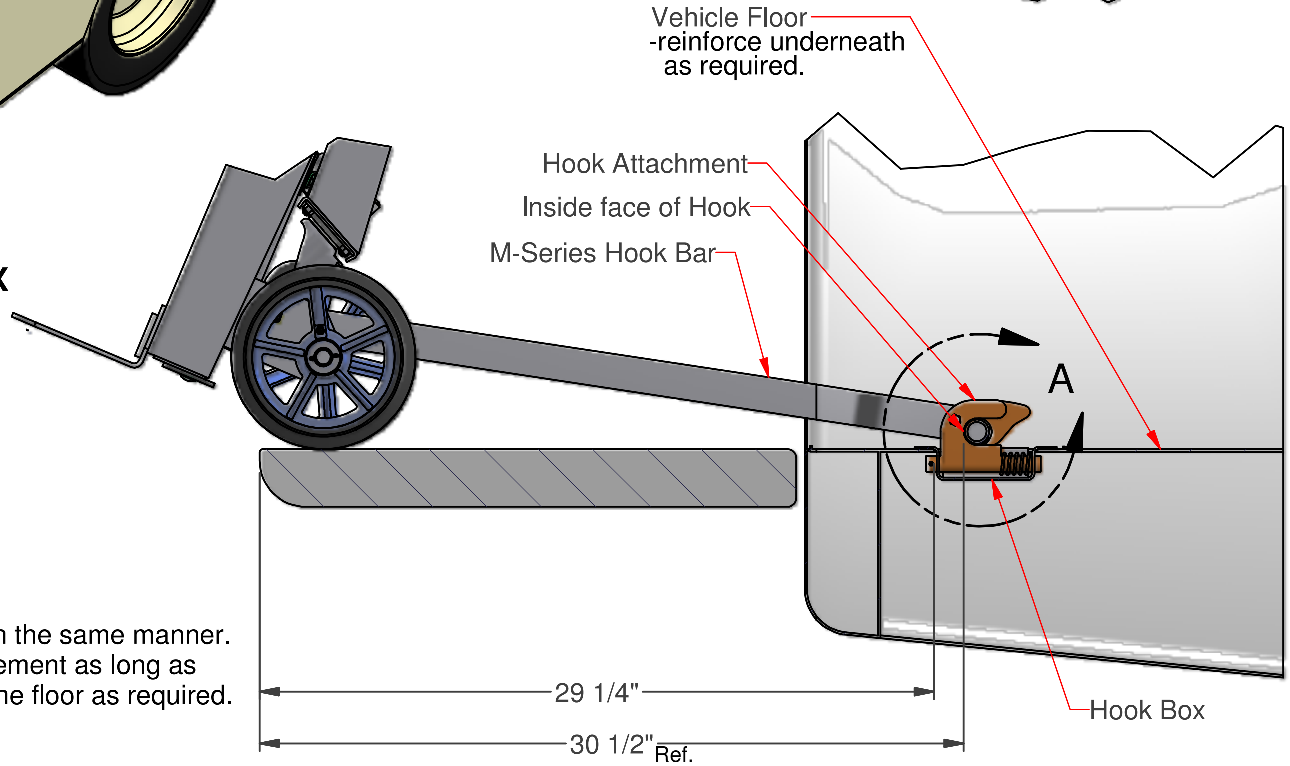


**POSITION IN PICK-UP TRUCK BOX**

1. Cut a rectangular hole in the truck floor to suit the Hook Box. Measure back from the drop edge (tailgate shown) 29 1/4"to the rear edge of the cutout. Center the cutout in the vehicle floor.
2. Bolt or weld Hook Box to the vehicle floor. Reinforce the floor underneath, if required. The Hook should be flush with the floor when in the down position.

DETAIL A



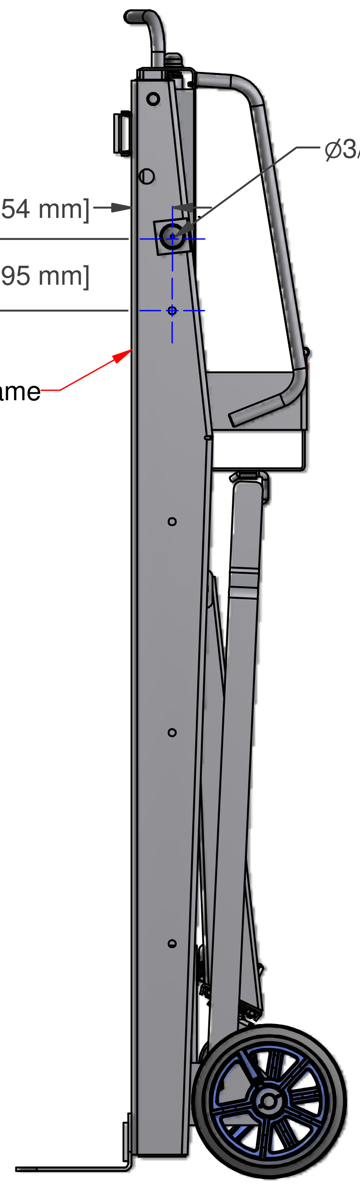


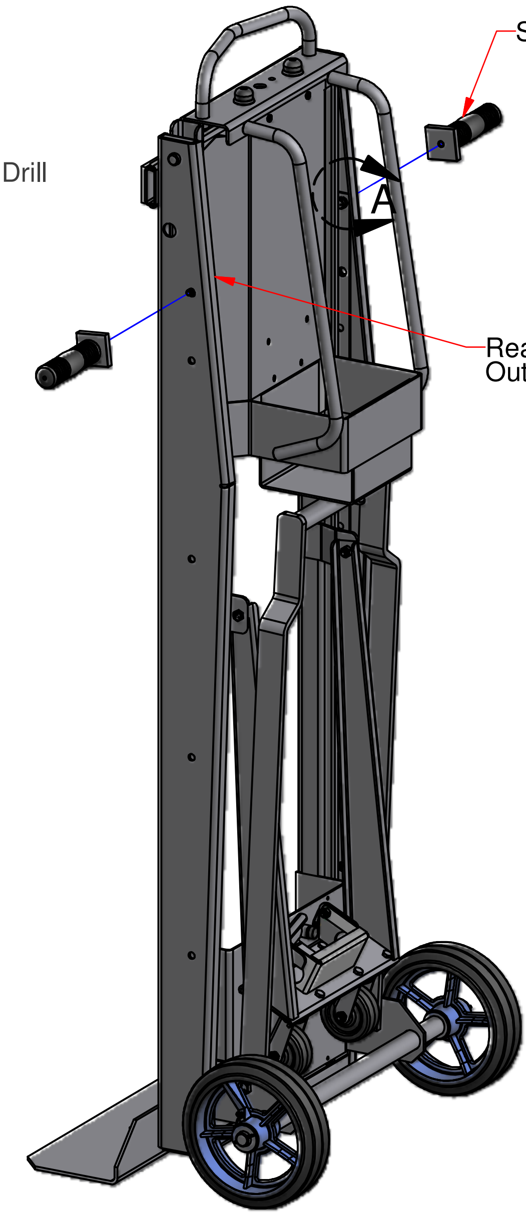

**SECTION VIEW**

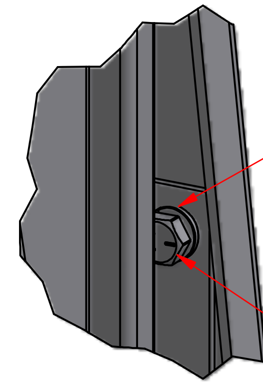
NOTE: The Hook Box is installed in a Flatbed Vehicle in the same manner. It may also be installed in a side loading arrangement as long as the 29 1/4"dimension is maintained. Reinforce the floor as required.

# SIDE HANDLE INSTALLATION INSTRUCTION

SIDE HANDLE KIT No. 400790




DETAIL A

Instruction:

1. Drill a 3/8"diameter hole in the Outer Frame 3 3/4" above the top Strap Bar holes.
2. Insert 5/16"Bolt and Washer into 3/8"hole from the inside of the Outer Frame. Thread Side Handle onto Bolt. Align a flat side of the Side Handle base to the rear face of the Outer Frame. Tighten Bolt.
3. Repeat above for other Side Handle.

PN 010760 Rev.C1
Assembly 400790
Eng. 02/ 28/ 11

# MAINTENANCE AFTER EVERY YEAR OF OPERATION

This equipment is designed for use as a heavy duty lifting device. To ensure operator safety and continuing trouble free operation, have the equipment thoroughly checked by a trained and competent service person at least once a year. This maintenance should be performed using the following procedure.

1. Place a load of at least 500 pounds (230 kilograms) on the equipment. Cycle the equipment up and down several times in order to evaluate its current condition. This load test will help reveal the condition of the drive and brake systems, the frame structures and the electrical components. Improper conditions may be exhibited by excessive vibration, unusual noise or slow operation.

2. Check the inner and outer frame assemblies for bending, flattening, twisting, loose -ness or worn surfaces of the frame members. Check the frame roller tracks for cracks and worn surfaces.

3. Check the rollers for free rotation. Lubricate the roller axles with light machine oil.

4. Check that the two main frame wheels and main frame axle are in good condition. Lubricate the two main frame wheels with multi-purpose grease.

5. Check that the strapbar mounting hardware is secure. Check that the load binding straps are not cut or frayed and that the strap locking handles are secure.

6. Remove the drive screw as outlined under “Drive Screw Removal and Installation”. Clean the drive screw and ballnut. Do not remove the ballnut from the drive screw.

7. Check for a close running fit between the drive screw and the ballnut. There should be no wobble or excessive clearance and the ballnut should run smoothly and freely. There is a small tube on the side of the ballnut for the re-circulation of the ball bearings. Check that the 2 tube halves are fastened tightly together. Check that the area of the outside threads at the top of the ballnut is in good condition. If any of these checks reveal a problem, replace the ballnut as outlined in the manual.

8. If during the test of the equipment in step #1, there was excessive vibration, check the drive screw for straightness. Replace the drive screw as outlined in the manual if the drive screw is at all bent.

9. Check that the ballnut locknut, drive coupling, top and bottom red urethane bumpers and brake cap are all in good condition.

10. Replace all of the components for the brake assembly and the override bearing as outlined elsewhere in this manual.

11. Check that the electric motor armature, brushes and bearings are in good condition.

12. Reassemble the drivescrew assembly and electric motor in the equipment as outlined elsewhere in this manual.

## MAINTENANCE AFTER EVERY YEAR OF OPERATION continued

13. Replace the Rubber End Cap on the bottom of the outer frame.

14. Remove and replace the two Push Buttons and Push Button Caps.

15. Check that all electrical wire connections are secure.

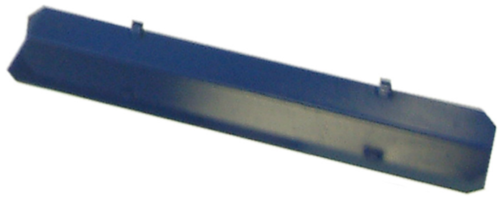
16. Check that the battery and battery charger are in good condition and that the battery is fully charged.

17. Repeat the equipment load test from step #1. Cycle the equipment up and down several times in order to evaluate its condition.

**WARNING** - All repairs, electrical or mechanical, should be carried out only by a trained and competent service person. Use only approved repair parts; any others may create a hazard.

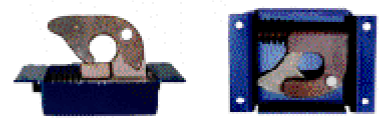
# ***PowerMate®*** ACCESSORIES/SPARE PARTS FOR M-SERIES MODELS

## 400100
EXTENDED TOEPLATE WIDTH



| | | |
|---|---|---|
| Depth | 6 1/2" | 16.51cm |
| Width | 32" | 81.28 cm |

## 400090
HOOK BOX



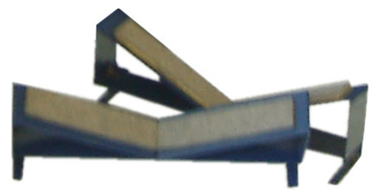
Steel box with fold down brass hook that mounts flush in the bed of a truck or loading dock to assist loading and unloading.

## 400180
EXTENDED TOEPLATE DEPTH



Depth
12" 30.48cm
Width
22" 55.88cm

## 400061
CYLINDER ATTACHMENT



| | | |
|---|---|---|
| Depth | 6" | 15.24cm |
| Width | 18" | 45.72 cm |
| Height | 4" | 10.16cm |

## 400280
HORIZONTAL SUPPORT BRACKETS



Two brackets per pkg.

Height 11" 27.94cm

## 400080S
EXTRA STRAPBAR

| | | |
|---|---|---|
| 400310 | 10' Strap | 3.05m |
| 400320 | 12' Strap | 3.65m |
| 400300 | 14' Strap | 4.24m |
| 400340 | 16' Strap | 4.87m |



## 400400
LOAD ELEVATOR



Supports load at three levels, centering the weight over the axle, permitting much easier handling.

| | | |
|---|---|---|
| Depth | 14" | 35.56cm |
| Width | 16" | 40.64 cm |
| Height | 18" | 45.72cm |

## 400200
FACE PLATE



Width
16" 40.64cm
Height
51" 129.54cm

Attaches to main frame to cover front of machine.

## 400190
SKID PLATE



Width
19 1/2" 49.53cm
Height
47" 119.38cm

Fits in front of strapbars. Used to elevate loads for easier handling.

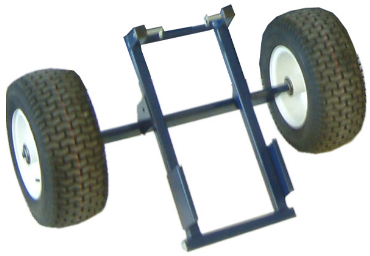
L P INTERNATIONAL INC.
P.O. Box 696, 151 Savannah Oaks Dr.,
Brantford, ON N3T 5P9
TEL: (519)759-3292 FAX: (519) 759-3298
1-800-697-6283
www.powermate.info

PN 010920 Rev.C1
Eng. 02/ 28/ 11

BLANK

# ***PowerMate®*** ACCESSORIES/SPARE PARTS FOR M-SERIES MODELS

## 404300
## BIG WHEEL ATTACHMENT



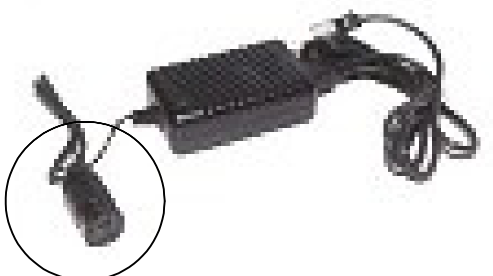
BIG WHEEL mounts onto the frame of an M-1 or M-2B in seconds. Designed to make traversing uneven, broken terrain much easier.

## 051310
## SEALED BATTERY
## 12V-30Ah




Gel pack, memory free battery. Charge only with PowerMate charger for best performance.

## 410210
## BATTERY CHARGER

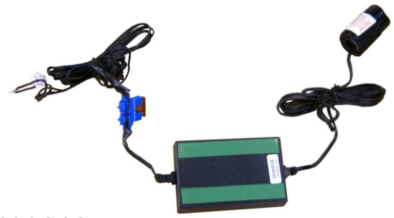


Solidstate charger with automatic shut-off. Safe to leave plugged into the PowerMate at all times. Will not overcharge the battery.

## 050390
## TWIST LOCK PLUG

## 400215
## IN-VEHICLE CHARGER

The MobileCharge 12E charges your PowerMate from the vehicle 12V system. When the vehicle if off, it will continue to charge for 2.5 hrs, protecting the vehicle battery. The 3-stage charging profile extends battery life and is independent of vehicle system voltage.

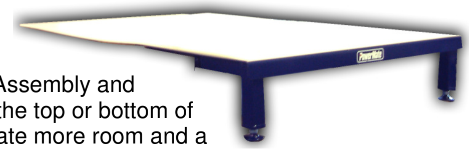


Battery Charger Remote Kit shown. In-Vehicle Charger comes with accessory port plug.

## 400216
## BATTERY CHARGER REMOTE KIT

Our hard-wired MobileCharge 12E smart charging system keeps yout PowerMate charged as it remains in the back of your vehicle. It will never draw draw the vehicle battery down below 70% capacity so your vehicle will always will have enough power to start the engine.

## 404210
## STEP EXTENSION

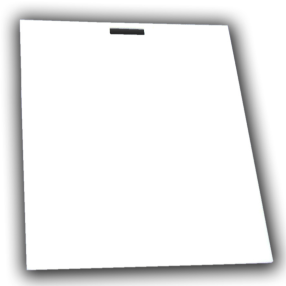


Comes with Mat Assembly and can be placed at the top or bottom of a staircase to create more room and a better turning surface for maneuvering your PowerMate with it's load. Allows you to complete 17% more moves.

Step Extension = 20"x 28" Mat Assembly = 22"x 44"

## 304200
## PIVOT PAD/MAT ASSEMBLY

Available in two sizes, the Pivot Pad is made of durable material which allows you to turn the PowerMate, with it's load, on a dime. Move your loads effortlessly around tight corners while protecting your customer's property.



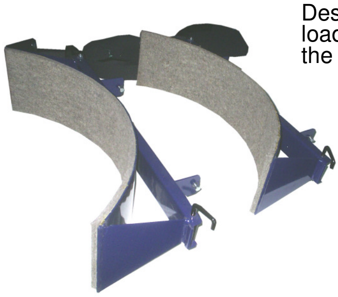
Pivot Pad = 24" wide x 30"l ong x 1/4" thick
Mat Assembly = 28" wide x 44" long x 1/4" thick

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P.O. Box 696, 151 Savannah Oaks Dr.,
Brantford, ON N3T 5P9
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www.powermate.info

# ***PowerMate***® ACCESSORIES/SPARE PARTS FOR M-SERIES MODELS

400062
HOT WATER TANK ATTACHMENT

Designed to secure cylinder loads to the machine minimizing the risk of product damage.



404100
WHEEL BRAKES



Depth 3 1/4 inch 8.26cm
Width 5 1/4 inch 13.35cm
Height 6 1/2 inch 16.51cm

Weight: 12 1/2lbs. 5.67kg

404400
TWIN LIFT

Allows for easy manoeuvering of large loads such as vending machines in tight spaces. Can turn machine and load 360 degrees effortlessly.





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Brantford, ON N3T 5P9
TEL: (519)759-3292 FAX: (519) 759-3298
1-800-697-6283
www.powermate.info

# Warranty

Every ***PowerMate®*** Safety Moving System supplied by L P INTERNATIONAL INC. including accessories, with the exception of batteries, straps and shear pins is guaranteed against faulty workmanship and defective materials for a period of one year from date of purchase, when given normal use and maintenance in accordance with operation manual.

The above warranty will apply only to the original purchaser.

L P INTERNATIONAL INC. do not hold themselves responsible for any damage caused by atmospheric or chemical influences nor defects due to unskilled operation, lack of maintenance and use of unprescribed lubricants. Neither do they accept responsibility for normal wear and tear and consequences therefrom. Warranty Service is available through your local authorized dealer or distributor. Warranty is void if serviced by unauthorized persons.

Machine Model ________________________ Serial No. __________________

Power Mate®

Manufactured By:

**L P INTERNATIONAL INC.**

MAILING ADDRESS

P.O. BOX 696, 151 SAVANNAH OAKS DR.
BRANTFORD, ONTARIO, CANADA
N3T 5P9

USA MAILING ADDRESS:
P.O. BOX 1132
LEWISTON, N.Y., 14092-8132

PHONE: (519) 759-3292
1-800-697-6283
FAX: (519) 759-3298

PN 010010 Rev.C.1
Eng. 01/ 20/ 11

# DAILY MAINTENANCE SCHEDULE

NOTE: If attempting any service repair work disconnect the battery by depressing the red button on the circuit breaker.

- Inspect unit frame for structural damage.
- Inspect for corrosion and broken welds.
- Inspect wheels and tires. Grease the wheels if required. Ensure the cotter pins are in place.
- Inspect all bolts and fasteners are in place and secure.
- Inspect the strap(s) for damage. Nicks or tears are not acceptable.
- Inspect the push button switches for condition and operation. Make sure the wiring is secure.
- Test the circuit breaker for operation. Cycle the unit testing for operation, direction and smoothness.
- Observe the roller operation in the outer frame rails. Oil rollers as required. Inspect the drive screw and ballnut for damage, bending during operation, and lubrication.
- Ensure the operating manual is readily available for reference.
- Keep the battery fully charged.

**FOR PARTS AND SERVICE CONTACT:**

**1-800-697-*Mate***

